

# Amateur Radio

Vol. 51, No. 7, July 1983

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JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA



Full Convention Report

Equipment Reviews — TR-7950-G-M10-1

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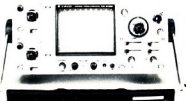
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## .. in this issue ..



The opening of VK2 Division's "Amateur Radio House".

### ARTICLES

Amateur Radio House by Bruce Bathols VK3UV	7
Broadband End Fed Antenna by A M Keightley VK6YX	10
Federal Convention 1983	24
Horse Endurance Trials-Field Exercise by Ian Jackson VK3BUE	16
Modern Military Surplus Part 4-C42 & C45 by Colin MacKinnon VK2DYM	18
Murphy's Parly	39
Poison Pen Letters	46
Regulations for Power Lines	39
Seven Element Yagi-Economy Version by Des Greenham VK3CO	8
Simple Marker Generator by Neville Mattick VK2QE	13
Test Equipment for Radio Experimenters by	



# amateur radio



R S Gurr VK5RG	9
WCY-Public Relations by John Hill VK3WZ	28
WCY-Students Celebrate WC Day 1983 by Ron Smith VK4AGS	14
WCY-WC Day in Adelaide by David Clegg VK5AMK	15

### DEPARTMENTS

A word from your Editor	3
Advertisers Index	64
ALARA	45
AMSAT Australia - new co-ord & scribe	47
AR showcase JRC HF Tcvt, M426 mobile ant	58
AWARDS - Rule changes for WIA awards. Work all Y2 rules	46
Club Corner - Eastern Zone Convention	9
Commercial Chatter	40
Contests - QLF. Keymen's of JA, WA's, 3.5 CW & SSB Test rules. Amend to JM results	50
Education Notes	49
Equipment Reviews - Kenwood TR-7950 & Mobile One Hamtennae M10-1	20
Five-Eigh Wave	56
Forward Bias	54
HAMADS	63

Here's RTTYI - Connecting RTTY Gear	38
How's DX	34
International News	41
Intruder Watch	37
Ionospheric Predictions	60
Letters to the Editor	59
Magazine Review	54
Main QSP - Rad Comm Bill	5
National EMC Advisory Service - Computer Car	48
Novice Notes - More about ATUS	30
Obituaries - VK4BAC & VK2ZA	63
Pounding Brass - A Retrospective	40
QSLs, QTHs, Heard & Worked	37
QSP	47
Silent Keys - VK2BIC, VK2BCM, VK3FJ & VK3MU	63
Spotlight on SWling	44
VHF UHF - an expanding world	42
VK2 Mini Bulletin	55
VK3 WIA Notes	56
VK4 WIA News	55
WIA News	6

### DEADLINE

All copy for September AR must reach PO Box 300, Caulfield South, 3162 no later than 25th July.

**EDITOR**  
GIL SONES\* VK3AUI

**TECHNICAL EDITORS**  
RON COOK\* VK3AFW  
PETER GAMBLE\* VK3YRP  
EVAN JARMAN\* VK3ANI  
BILL RICE\* VK3ABP

**CONTRIBUTING EDITORS**  
MIKE BAZELY VK6HD  
RON COOK\* VK3AFW  
REG DWYER VK1BR  
BRENDA EDMUNDS VK3KT  
MARSHALL EMMS VK5FN  
RON FISHER\* VK3OM  
BRUCE HANNAFORD VK5XI  
ROY HARTKOPF VK3AOH  
ROBIN HARWOOD VK7RH  
COLIN HURST VK5HI  
ERIC JAMIESON VK5LP  
MARGARET LOFT VK3DML  
KEN McLACHLAN VK3AH  
LEN POYNTER VK3BYE  
TONY TREGALE VK3QQ

**DRAFTING**  
GEORGE BROOKS  
LIZZ KLINE

**BUSINESS MANAGER & SECRETARY**  
REG MACEY

**ADVERTISING MANAGER**  
JOHN J A HILL VK3WZ

\*Member of Publications Committee

Enquiries and material to:  
The Editor  
PO Box 300, Caulfield South Vic. 3162

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## a word from your EDITOR

Each new transceiver seems to extend the features which can be provided by microprocessor control of the radio. The actual receiving and transmitting sections advance much more slowly.

There are many applications for microprocessor control both in accessories and in operating aids as well as in the basic transceiver. Many of these systems can be bought, such as RTTY and Morse computer systems and some of the logging programmes.

Many applications lie awaiting development. As the editor of *Amateur Radio*, I would like to run articles on such applications and developments.

Whilst the computer systems grow bigger and more versatile there have been many simple and cheap computers available. They surely mark the way ahead.

One thousand dollars and up will buy you a very powerful computer. But the price excludes all but the devoted computer hobbyist.

Those coming into amateur radio or trying to enjoy amateur radio whilst meeting other family commitments think very carefully before making such outlays. The \$200 computer is much closer to their requirements. The \$100 machines will soon be here. They are already carving their niche in the world market.

Send *Amateur Radio* articles on how to use these machines. What about RTTY using one of these low budget machines.

Other programme ideas are a good Oscar programme or an antenna rotator controller or maybe a transceiver controller. But most importantly send it to *Amateur Radio*. The field is limitless. Whilst the cheap machines may not be as impressive to the computer enthusiast they hold great promise.

Gil Sones VK3AU  
Editor

AR



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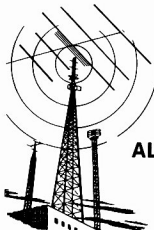
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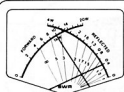
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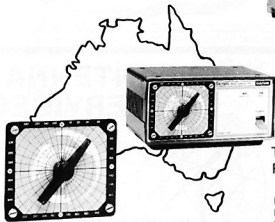
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Permissible		
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# QSP



## THE RADIOCOMMUNICATIONS BILL

Australian amateurs operate under regulations based on a very old Act of Parliament. The Wireless Telegraphy Act was passed by Federal Parliament in 1905, with the suggested intention of making wireless telegraphy a "Commonwealth monopoly"! The present Act, the legislative framework supporting Australia's complex mixture of public and private radio communication systems, represents seven amendments since 1905. Several newer Acts control navigation, broadcasting and television, licence fees, and other aspects of communications.

In 1980 the Department of Communications prepared for new legislation to replace completely the old Act and all its amendments. Draft principles were stated and public comment invited. The Institute's response, a twenty two page submission in January 1981, was said to be of considerable help in drafting the new Bill. After several delays the Bill was released for public comment late in February 1983.

The WIA had meanwhile set up the Communications Act Special Planning and Response Committee (CASPAR), which held its first meeting on 17 March. It has seven members VK3s AE, NE, XX, AFW and AMD with chairman VK3ABP and secretary/co-ordinator VK3QQ. Executive required from CASPAR a detailed report on all aspects of the Bill relevant to the Amateur Service, including all comments by Divisions and individual amateurs, as requested several times in AR and Divisional news broadcasts. Comment was received from the VK1, 2, 3 and 4 Divisions and from several individuals. The VK1 comments were of particular value, being a fifteen page discussion by VK1GB, a practising barrister.

After three meetings in two weeks, CASPAR presented its findings to the Institute's Federal legal consultant VK3KI at the end of March. It then met with him and members of the Executive on 14 April to discuss the draft submission which he (and 1GB on the telephone) had prepared over Easter. With little alteration the twenty three page VK3KI draft was then presented to the Federal Convention on 24 April. The final submission was presented by VK3KI personally to the IREE Workshop held in Sydney on 26 and 27 April to discuss the Bill and its implications. It was well-received by all present, including the DOC representatives, and was then formally submitted to the Department.

I have taken this long, over the history explanation to make clear that the Institute's submission is a carefully thought out legally-drafted document representing many hours' work by many people, in which there has been the greatest possible scope for participation by all members of the WIA either as individuals or through their Divisional Councillors.

*But what is in the Bill itself? What changes would we like to see in it before, tabled, debated and passed in Parliament, it finally becomes the new Act? Regrettably, in the space available here it is only possible to mention a few main points. The Bill itself has eighty three clauses and occupies forty six pages. To quote parts of the outline which follows the published text, it "makes provision for common standards for radiocommunications receivers and transmitters and for offences with respect to sub-standard equipment . . . provision for compliance statements and compliance certificates . . . provision for a spectrum plan and frequency band-plans and for transmitter and receiver licences. Part . . . is devoted to the settlement of disputes with respect to interference to radiocommunications. Enforcement and procedural matters are also dealt with."*

Many of the provisions of the Bill, as might be expected, re-state in modern terms what we already understand to be the function of the DOC. But its novel underlying theme is interference minimisation by much tighter control over transmitting equipment, to include anything capable of transmission **even if not so intended**. Unfortunately similar provisions do not apply to all receivers, nor to so-called "non-receivers" such as audio equipment. This is thought to be due to doubt about the Commonwealth's constitutional power to control such devices. It was not until 1935 that the basic power to make laws about "postal, telegraphic, telephonic and other like services" was held to encompass "Wireless telegraphy" — thirty years after the original WT Act!

Rather than continue with a description of the Bill (which is available from the Government Printing Office) the points on which the WIA has made comment will now be listed. The aspects which we find undesirable or inadequate may be inferred from the comments. The WIA:

- 1 Suggests creating specific offences regarding false distress messages, deliberate interference, and disclosure of received information by other than the intended recipient, the latter in lieu of receiver licensing.
- 2 Opposes possession of a sub-standard transmitter being made an offence.
- 3 Agrees that broad standards are necessary, particularly as regards transmitters, but considers that the Amateur Service (because, uniquely, its technically qualified operators engage in self-education by constructing or modifying their equipment) should be exempt from such standards.
- 4 Suggests that the Bill be extended to include control of interference — susceptible appliances and that the power to do this may have been established by the Trade Practices Act.
- 5 Suggest that the interference conciliation procedure be extended to cover more fully those suffering interference (from whatever source).
- 6 Opposes the power to license all receivers (other than broadcast or TV, already excluded) and suggests licensing should apply only to receivers for commercial satellite transmissions above 1 GHz, if at all.
- 7 Recommends that spectrum and band plans shall be in accordance with international agreements and subject to public comment at the draft stage.
- 8 Questions the need for any search to be authorised without issue of a warrant by at least a magistrate (as distinct from a JP).
- 9 Suggests that the Bill should not preclude licensing for periods longer than one year.

It was further decided at the Federal Convention that the Institute should recommend creating an offence of selling a radiocommunication transmitter to a person or agency not appropriately licensed.

Notification has already been received from DOC that amendments to the draft will follow WIA points 2, 4 and 7. The Institute continues to negotiate on the other points, particularly 1, 3, 6 and 8, and suggests that with such amendments the Bill should be introduced in Parliament as soon as possible in view of the urgent need for effective control of interference.

W M Rice VK3ABP  
Chairman CASPAR Committee  
AR

## WIA NEWS

### CHESS-ON-THE-AIR

Further to representations made to the Department of Communications by the WIA, and as discussed at the DOC/WIA Executive meeting of 30 March 1983, the Department has advised and confirmed, that Australian amateurs are now permitted to participate in, and conduct on-the-air chess sessions over the Amateur Network. Sessions must of course be conducted in accordance with correct amateur procedures.

AR

"Is the audio any better now?"

VK2EBM

VK4LID

## HURRY!!

### CONTENTS

	Page
Assistance Required	made each year
Books on Amateur Radio History	51
Call Signs and QSO's in Peter Goss VK3CF	54
Chronological Historical Table	15
Emergencies by Ben Henderson VK4JLH	34
Federal Conventions	11
Federal Proposals	12
Foreword	5
Guide to Regulations	64
Hypothetical Award	60
International Amateur Radio Union (IARU)	62
International Telecommunications Union (ITU)	62
Institutions	6
Lost the Key?	20
Life Members	16
Marine Surfers	41
Member Keys by Alan Drayman VK4JLH	41
Publications on Amateur Radio	10
Remembrance Day Contest	38
Robinson Achievement Award	47
Surfing by Bob Arnold VK2ZB	47
Servants	47
The Telegraph by Len Pearson VK2BYE	36
Self Projects	46
W.I.A. Constitution, Policies and Organisation	7
What is ARPA?	46
W.I.A. Publications by Bruce Batho VK2ZV	46

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# AMATEUR RADIO HOUSE

Bruce R. Bathols VK3UV  
FEDERAL PRESIDENT

*The NSW Division's new premises at 109 Wigram Street, Parramatta, "Amateur Radio House", was officially opened on Saturday 28th May 1983 by Mr Gary Punch, MP for Barton. Mr Punch delivered a brief history on amateur radio, concluding with an acknowledgement to the WIA on its excellent submission in respect of the Radio Communications Bill.*



View of VK2 Rooms.

Special invited guests were Mr Stan Dickson, Mayor of Parramatta, Mr John Milton State Manager (NSW) Department of Communications, and the WIA Federal President Mr Bruce Bathols, VK3UV.

Approx 150 members and their wives attended the opening ceremony, which was also broadcast live on VK2BWI Amateur Television on 426 MHz. Many old timers were present, and were caught reminiscing in quiet corners.

Amateur Radio House consists of two stories, and includes a large library/reading room, activities room, offices, storage rooms etc. It is a magnificent structure, and something which the NSW Division can be very proud of.



Amateur radio "Yesterday Display" set up for the opening.



Part of the VK2 Bookshop in Amateur Radio House.

It will serve its purpose well, being centrally located amid the majority of Sydney's amateur population, no problems with parking and very convenient to public transport.

Congratulations must go to Susan Brown, VK2BSB and her tireless group of helpers in arranging such an impressive opening ceremony.

A special article is being prepared for future publication in Amateur Radio detailing some of the problems and jubilations in completing this project.

Photographs by Bruce Bathols VK3UV.

AR

Full report from VK2 in August AR.

# SEVEN ELEMENT YAGI ANTENNA — ECONOMY VERSION

Desmond A Greenham VK3CO

23 Stewart Street, Seymour, Vic 3660

If you are fortunate enough to live in a high location with a good clear outlook in all directions, then a simple omnidirectional antenna is all you will need for 2 metre FM operation, particularly into repeaters. Any basic antenna such as  $\frac{1}{4}$  wave,  $\frac{5}{8}$  wave, Slim Jim, J Pole, etc will be adequate. However, if you live remote from the repeater site, or in a "difficult" location, some antenna gain and directivity will be an advantage.

The antenna to be described has a worthwhile forward gain and is simple and cheap to construct. The elements are made from aluminium wire or tubing and are 2 to 3 mm diameter. The boom is also from an old "channel 2" TV antenna and is 1" (25 mm) diameter, 2.4 m long. New material can be used and either 25 mm round or square section could be purchased depending on the method used to mount the elements. Element mounting is left to the constructor as there are numerous ways available. Suitable plastic mounting blocks are available from component retailers although these are relatively expensive. Old TV mounting brackets can be used effectively, however, the simplest method is by simply drilling holes through the boom and securing the elements with a self tapping screw. There is no best way for mounting — even the use of "Araldite" glue combined with nylon fishing line square lashing can be mechanically solid.

The antenna is quite conventional, using a folded dipole driven element, and reflector. A close spaced "launching" director is used to provide close coupling and impedance correction, and five directors for additional forward gain. The antenna is fed with fifty ohm or seventy five ohm co-axial cable with a half wave balancing section. This not only converts from unbalanced cable to a balanced feed but also raises the impedance by four times. Assuming that seventy five ohm cable is being used the impedance would be 300 ohms. The folded dipole is constructed with unequal diameter material to raise the feed impedance to 300 ohms thereby giving a good match to the feed system.

The folded dipole driven element is shown in the drawing and uses 6 mm tubing on the main element with 14 gauge (B & S) wire as the feed element. The ends are connected using solder lugs held with rivets, metal screws or "pop" rivets. The insulation block can be PVC or similar plastic — an old tooth brush handle is very suitable!

The feed cable and the 4:1 Balun should be tightly taped with PVC tape to prevent moisture entry. The cable should be taped along the boom and come away from behind the reflector. Taking the cable direct down the mast can distort the radiation pattern as the cable braid is close, and parallel to, the director elements.

For vertical polarisation, the antenna should be mounted on a length of PVC pipe or other insulating material with the

elements vertical. Mounting direct on a metal mast will affect the feed impedance and radiation pattern.

After completion, all measurements should be checked and the feed cable connected.

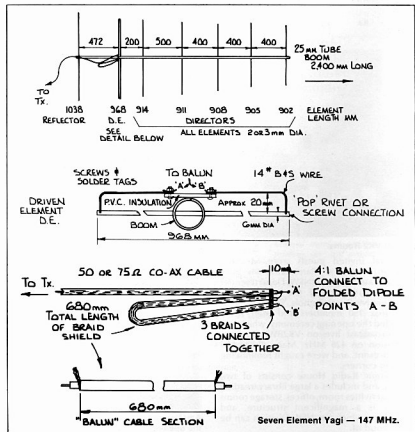
The PVC or Wooden stub mast should be bolted or clamped to the main metal mast and the antenna raised into the operating position as high as possible above ground.

The antenna is designed to use 75 ohm co-axial cable, however, 50 ohm cable can be used with a slight deterioration of SWR. The feed cable should be as short as possible as the loss in cable is quite high — in many cases the gain obtained by the antenna can be lost in the feed cable.

The SWR should be checked on 147.00

MHz. If everything is correct and the antenna is at least three metres above ground, in the clear, an SWR figure of 1.2 can be expected. No adjustment is provided, however, an impedance change can be made by changing the reflector to driven element spacing slightly. This will not affect the forward gain to any great extent.

This antenna is very standard and no extravagant claims are made for its performance. Provided the construction is solid and dimensions are correct, the performance will be good and equal to most commercial antennas with the same number of elements. The major difference, however, will be in the cost and this is always an important factor to the majority of amateurs.



# TEST EQUIPMENT FOR THE RADIO EXPERIMENTER

## TWO TERMINAL OSCILLATOR

R S Gurr VK5RG  
PO Box 35, Daw Park, SA 5041

*One of the most useful items, installed in my workshop for some years, is a "two terminal oscillator". This simple instrument is an oscillator, either tube or transistor type, that is coupled into a standard digital frequency counter.*

There is no tuned circuit in the unit — only two terminals, across which any unknown tuned circuit may be connected. The circuit then oscillates on the resonant frequency of the L/C combination.

Direct counting on the frequency meter is of course the simplest method, however I had the unit going for twenty years prior to using the counter. The oscillator puts out harmonics, and with a general coverage receiver, it is not difficult to locate the various signals and calculate the fundamental frequency.

Application to audio frequencies as well as radio frequencies is possible, however, the most satisfactory method is to have two separate oscillators. When selecting capacitors for tuning RTTY filters built up around 88 mH toroids, the unit proved most useful.

### INDUCTANCE AND CAPACITANCE MEASUREMENT

Another advantage of the unit is the means by which L and C values may be measured approximately. At RF, I have a calibrated capacitor and inductance, across either of which an unknown L or C can be connected, and after the frequency of oscillation is known, an ARRL Lightning calculator, ABAC chart, slide rule, or electronic calculator, will give the value of the unknown very quickly.

The same method of inductance measurement for audio work is possible — a handful of surplus and valueless pot-cores can become of considerable value in a few minutes, once inductance values become known.

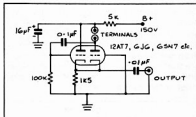
The basic circuits were inspired from early editions (1942 I think) of the "Radio Handbook", and the current 1982 edition still carries the same circuits. Two types, the "Transitron" and the "Cathode Coupled" oscillators are shown using 6BA6 and 12AT7 tubes respectively. The FETs I use are usually MPF102.

My own circuits have some slight modifications as shown, and in either tube or transistor format, they function satisfactorily. Other oscillator circuits will suggest themselves.

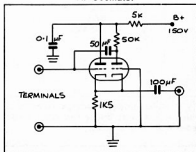
I have been able to use the unit to set tuned circuits to frequency before installation up to and beyond 30 MHz, select correct tracking and padding circuits for project receivers, check unknown Intermediate Frequency transformers, etc.

The units may be mounted on general purpose power supplies, as complete instruments, loose on leads, etc. I have them in all the above configurations. Stability for use as a VFO is determined more by the L/C combinations than by the actual circuit used, and therefore at times a complete VFO may be fabricated, and as mentioned above, tracking may be checked.

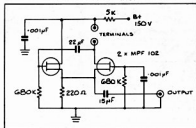
The following circuits are typical of those in use:



AF Oscillator



RF Oscillator



RF Oscillator (solid state)

# CLUB CORNER

## EASTERN ZONE CONVENTION

Photographs by Fred Hobson VK3QH.



Len VK3AKU, white stick operator, at the controls of the Station at the Victorian Division Eastern Zone Convention in March 1983. Len uses a speech synthesiser coupled to digital readout on transmit and audio tones to tune the transceiver and antenna.



Ken VK3KC's slow scan equipment at the Convention.



Len VK3AKU's station at the convention.



Ken VK3KC operating slow scan video camera.



# THE VK6 BROADBAND END FED ANTENNA

A M Keightley VK6YX  
242 Serpentine Rd, Albany, WA 6330

**A low noise, low SWR, 160 to 20 metre antenna only 22½ metres long.**

The basis of this antenna design is from two main sources, firstly the development of a three wire end fed antenna for amateur use by John VK6IM of Australind, with whom I have conducted on air tests for many months, (mainly on 160 metres) and secondly the recent article in 'AR' of April 1982 'The Australian Broadband Antenna'.

Prior to the testing with VK6IM I had the belief that, generally, end fed antennas suffer from the problem of powerline and man-made noise pickup much more than a balanced antenna. John kept describing the low noise pickup of his developing antenna, so I gradually became interested in thinking how the good characteristics of his design could be improved to reduce the SWR excursions being experienced. Much thought was given to the many possible methods of assembly to reduce the possibility of corrosion problems of dissimilar metals, to reduce the weight while retaining good strength.

## DESCRIPTION

Figure 1 shows the general arrangement of the final design. The antenna consists of two parts joined by a parallel connected resistor and inductor. The lower section is connected to the feed line via a balun. The upper section is about half the length of the lower section. Both sections are in a five wire cage configuration. Further details are given later in this article.

## TESTING

An antenna was constructed, erected and considerable testing conducted to determine its characteristics. It was instal-

led between two towers with the feed end at ten feet and the far end at thirty feet. First testing was done by taking an FRG7 receiver and an RX noise bridge up the tower to the feed point and recording the antenna impedance from 1.7 to 16 MHz. Coils from 12 to 30 micro-Henry were tried before selecting 19µH. As this value gave the most satisfactory results, although it is not critical. These feed impedance figures were very interesting, showing a gradual drop below 2 MHz, a peak at 8 MHz and a gradual rise above 12 MHz, with the noise bridge indicating some 154 ohms over most of this range. See Fig 2.

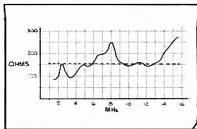


Fig 2 Noise bridge readings taken with Polomar R-X noise bridge and Yaesu FRG7 receiver at the feed point.

An Amidon T200-2 powdered iron core was obtained and a suitable matching transformer constructed to permit transmitting tests to be conducted and recorded. As indicated in the Amidon literature, the use of one of these should tend to reduce the SWR excursions. This proved to be the case and the results showed that the transformer characteristics seemed to compliment the antenna performance, with the resulting SWR not exceeding 1.2:1 from 1.8 to 14.35 MHz. See Fig 3.

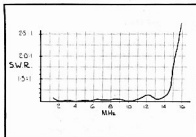


Fig 3 SWR indications recorded at transmitter end of coax using matching transformer at the feed point.

Next some listening tests were conducted, comparing audible signal to noise ratios, between the test antenna and several verticals and a dipole antenna on commercial frequencies. These certainly showed the low power line noise pickup and while signals were a little down compared to some of the antennas, the readability of signals were greatly improved on the broadband antenna. Some simple radiation tests were conducted from twelve locations reasonably equally spaced at some three kilometres radius on roads thoughtfully provided by the powers that be. Two Drake TR7 transceivers were used, mobile and at the base. Ten watts were used for the tests, taking care that the vehicle was oriented in the same direction

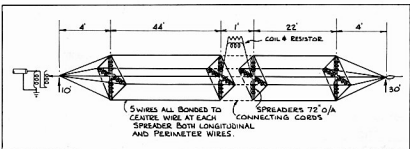


Fig 1 General arrangement of the Broadband Antenna.

compared to the test antenna. Received signal strengths were recorded in both directions on 160, 80, 40 and 20 metres. These showed a nearly circular radiation pattern on each band. Tests were then conducted over a radius of 53 kilometres on the amateur bands and some testing on a commercial frequency. These confirmed that the antenna was working up to expectations, particularly on 160 metres, which was providing excellent communication throughout the day; some 480 kilometres were travelled on this occasion, mostly 50 to 70 kilometres radius from the test antenna. The five-wire design was proving to be as effective as hoped.

## CONSTRUCTION

The wire used for the antenna is single strand .85 mm half-hard copper wire. The antenna is strong, because of the five wires in parallel and is suitably light in weight. The spreaders are 6 mm diameter fibre glass rods purchased from a city plastics supply company in three metre lengths. These are cut into 73 inch lengths and drilled in the centre and at  $1\frac{1}{2}$  inches in from each end, with a  $\frac{1}{16}$  inch drill, the end holes being at right angles to the centre hole. The imperial measurements came about by using an imperial rule and materials on hand. Some  $\frac{1}{16}$  inch stainless steel weld wire is cut into four, one inch pieces and sixteen pieces,  $\frac{3}{4}$  of an inch long. The long pieces are hammered through the centre holes of two rods. The shorter pieces are then driven into the end holes; these are to prevent the antenna wires from moving along the rods. Take one spreader assembly and using a clove hitch, attach the end of some .85 mm copper wire to the end of one rod, above and below the pin leaving about three inches of pigtail. Pull the hitch tight. See photo 1. Measure from the centre of the rod, 51.9 inches and mark the wire with a wick pen, then place the mark on the next rod in line with the pin and form another clove hitch, pulling it tight. Continue this around the square, adjusting the length of the last one to have the wire taut. Treat the other three spreaders in the same way.

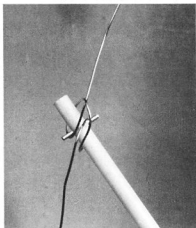


Photo 1 Wire being fitted to spreader rod, showing fiberglass rod and retaining pin.

Procure several metres of 'Vinyon' cord from your friendly butcher who uses it to tie up roasts of beef. This makes excellent supports and halyards for antennas as it does not seem to be effected by sunlight or weather conditions. Cut five pieces about two feet long, attach one end to the end of one spreader assembly using a clove hitch over the wire and pin, then measure along the cord 12 inches, place another mark and attach to another spreader assembly. Do this at each corner and at the centre.

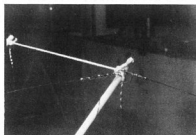


Photo 2 Centre section spreaders showing 12 inch cord lie between two spreaders and the coupling of longitudinal and circumference wires to the central wire.

The next stage requires a flat area some 80 feet long, a concrete driveway is very suitable, and some firm portable supports for each end to attach wires to for the final assembly. Cars, fences, gates can all be pressed into service; the amateur is usually most inventive here.

Several helpers will be useful for this phase of the construction. Have one person hold a spreader vertical, resting it on the ground about five feet from one end support. Tie a piece of .85 mm wire to the spreader using a clove hitch and leaving about six feet of pigtail. Tie this to the support, level with the spreader centre. Measure along the wire 44 feet from the spreader, mark the wire and cut it off about six inches longer. Now attach the wire to one of the centre pair of spreaders at its centre. Attach the end of another piece of wire to the centre of the other spreader pair, leaving a pigtail, measure along 22 feet, mark the wire before cutting it off some six feet longer and attach it to the centre of the remaining spreader. Pulling firmly, attach it to the end support some five feet away and in line with the centre. Continue this method of assembly for the next four wires placed at the ends of the rods remembering to place the wire above and below the pins to prevent it sliding along the rods in use. The next job is to bond each of the longitudinal wires to the spreader squares at each spreader, both sides of each rod. Now attach another wire to a longitudinal wire, spiral it around the rod seven or eight times to the centre and tie it to the centre wire. Do this on each rod of every spreader, effectively bonding all wires to the centre wire.

A suitable egg-type insulator is now fitted to the centre wire four feet from an end spreader and tied off. Carefully attach each of the remaining wires, keeping even tension on each wire while ensuring the

insulator remains in line with the antenna centre. Carry out the same insulator installation at the other end. Now fit two feet of multi-strand flexible insulated wire to the antenna at the insulator on the long end and secure through the insulator. Attach two similar wires one foot long to the centre wires at the centre spreaders. Now all the twisted joints are to be soldered and suitably protected from oxidation by an application of Silastic or similar material. Incidentally, do not use 'RTV732' as the chemical action during curing is corrosive to copper. 'RTV738' does not have this problem and can be used with confidence on any copper materials.

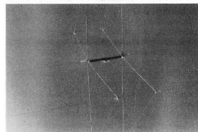


Photo 3 View of the centre section with inductance and resistors fitted.

## LOADING COIL

The loading coil is 50 turns of 1 mm enamelled wire close wound in the centre of one inch OD PVC tubing, 14 inches long. Drill two small holes through the conduit to secure the ends of the coil. Cut and tin these ends and solder six 2.2 kohm one watt resistors in parallel across the coil as shown in photo 4, the coil assembly should now be mounted in the centre of the centre spreader assembly and secured with some of the Vinyon cord, the flexible wires from the antenna centre wires shortened and soldered to the coil ends. Now protect the coil-resistor assembly from the weather by a coating of Silastic or similar.

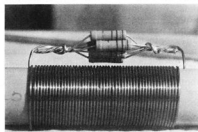


Photo 4 Inductance and resistors.

## MATCHING TRANSFORMER

Obtain about 4 1/2 feet of two different coloured 1 mm enamelled winding wire. Twist the wires together at one end and hold in a vice. Pull the wires tight, cut them off to the same length, twist the free ends together for about a half inch and place into the chuck of a hand drill. Keeping the wires stretched firmly, wind the drill to twist the wires until there are one and a half twists per centimetre. Now wind 24 turns of



Photo 5 Matching transformer showing tapping method.

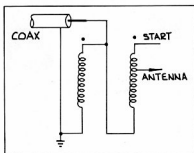


Fig 4 Matching transformer wiring.

the twisted pair on to an Amidon T 200-2 powdered iron core. Keep the turns right onto the surface of the core by forming a slight reverse bend to the wire as it is placed on the flat portions. Connect the start of one winding to the end of the other as indicated in photo 5 and Figs 3 and 4. Count around the core 18 turns, carefully cut the secondary wire, and scrape the ends away from the other wire and scrape the ends. Loop some 1 mm tinned copper wire around the ends, keeping it away from the second wire and form up a link. Squeeze it firmly onto the wire ends and solder in place. The transformer can now be mounted in a protective box. A square electrical junction box is very suitable as shown in photo 6. A coax fitting and two brass bolts are fitted and the core secured to the bottom of the box with Silastic. A suitable

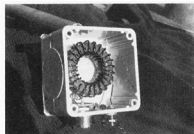


Photo 6 Method used to mount matching transformer in Clipsal 265/3 box.

bracket can be fitted to the rear of the box to hold it onto the tower or whatever support is used for the feed end of the antenna, making sure that it is close to the end of the antenna.

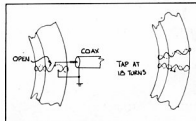


Fig 5 Matching transformer connection detail.

## INSTALLATION

Attach the feed end to a suitable support (tower, building, 2 inch water pipe in the ground etc) together with the matching transformer and run a heavy copper wire down to an earth spike, water pipes etc. The earth losses are minimal due to the moderately high feed impedance. The far end can now be hauled up to a suitable support with the antenna end being 30 feet up. Couple to the matching transformer with 50 ohm coax well weather proofed.

## USE

It is desirable to use a good low-pass filter (ARRL and RSGB handbooks) at the transmitter to prevent any possible low level spurious signals being radiated, which would normally be attenuated by the usual fairly high 'Q' antenna systems we use. This enables the antenna tuning unit to be taken out of circuit for this antenna, making band changing for those with solid state rigs, a breeze. The results with a general coverage receiver are very pleasing, compared to what we usually experience with the usual 80 metre dipole. By all means check the SWR and be amazed at the very low readings obtained, enabling the solid state rigs to give full output on all bands from 160 to 20 metres, not forgetting 30 metres.

## CONCLUSION

I believe this antenna meets the need many amateurs have for a good 160 metre antenna which can be fitted into the average suburban back yard, as it requires only 75 feet of length. The added bonus of low noise pickup and performance continuously to the top of 20 metres makes it very worthy of consideration. Those amateurs using transceivers with general coverage receiving capability, will also appreciate this antenna.

AR

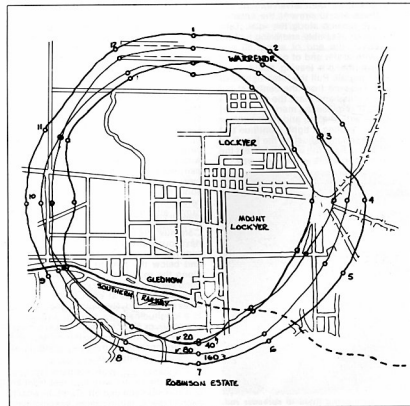


Fig 6 Amateur band radiation test results.

# SIMPLE MARKER GENERATOR

Neville Mattick VK2QF  
"Hill Top", Hargraves, NSW 2850

Although a marker generator is probably a thing of the past this device may be as useful as a signal generator around the shack. It has obvious uses for the not so well calibrated receiver or home brew project receiver. In addition, it has uses for receiver "IF" and front end alignment with signals that are spot on frequency. With some variations it is based on a unit described in a 1977 ETI publication.

Construction is not critical. The author used a Dick Smith "DIL" board for the four ICs and oscillator circuit. It is suggested that the oscillator components be mounted on one end, the ICs — one to four across the board. Sockets were used for all ICs. Good shielding of the generator in a metal cabinet is an advantage to lessen leakage of unwanted harmonics. The six position rotary switch used was an old eighteen position type which gave two vacant positions between output positions. Shielded cable was used to connect the switch.

Power was taken from the shack general purpose supply of 13.8 V and further regulated within the generator by a 7812 three terminal regulator.

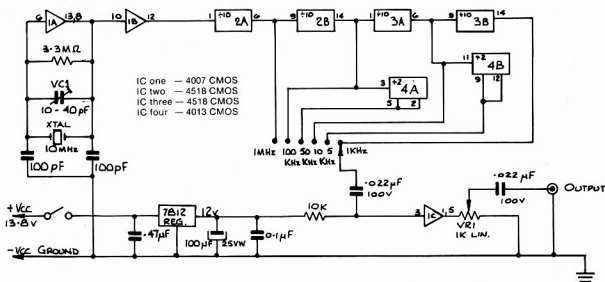
Other combination outputs are possible. Eg. output of IC4A to input of IC4B would give 25 kHz markers which are useful well into the 2 metre band, as are the other frequencies generated, dependent on receiver coupling, of course.

Components are common types, all ICs are CMOS devices, VC1 trimmer should be of good quality to ensure stability.

Alignment is done by selecting a known frequency standard, eg. VNG or WWV, coupling the generator to the receiver and adjusting for equal level of signal from the standard and generator on receiver "S" meter. Once this has been done adjust VC1 for zero beat condition and finally tune VC1 until there is no practical movement in receiver "S" meter.

All components are available from Rod Irving Electronics including crystal and printed circuit board.

AR



A Simple Marker Generator

IC1 (4007) Pins 7, 4 and 9 are grounded. Pins 14, 2 and 11 are plus 12 V Vcc.

IC2 and 3 (4518). Pins 7, 8 and 15 are grounded. Pins 2, 10 and 16 are plus 12 V Vcc. Pins 3, 4, 5, 11, 12, 13 — no connection.

IC4 (4013). Pins 6, 4, 8, 10 and 7 are grounded. Pin 14 is plus 12 V Vcc. Pins 1 and 13 — no connection.



# STUDENTS CELEBRATE WORLD COMMUNICATIONS DAY, 1983

Ron Smith, VK4AGS  
Oakley State High School, Qld 4401

Photographs — Oakley State High School.

*Members of the Oakley High School Radio Club organised a major public display of communications at the school on 17th May, World Communications Day 1983. Members of the club read the notes about WCD in May Amateur Radio, and decided that the opportunity was too good to miss as both an educational opportunity and a promotional exercise for the hobby.*

Very early in May a letter was sent to about forty schools within 60 km, advising them of the significance of WCD and suggesting about fifty different activities in different subject areas which might be undertaken on this day.

The next move was to plan and establish the display. Early discussions indicated that although there would be an obvious bias towards our hobby, there was much more to communications than just the hobby. However, many aspects of the hobby can be used to demonstrate communications in practice, eg RTTY. Consequently approaches were made to Telecom, Department of Communications, WIA(Q) and local commercial suppliers. (An approach was made to the local military Air Traffic Control facility who, although willing, were unable to help within the short time scale.) A search was made of local amateurs' shacks and junk piles as well as other assorted "junk" around the school.



Typing at the Model 15 Keyboard are Carolyn Temple Watts watched by Ann Marie Edlie.

Some of the students had little knowledge of amateur radio but were given the task of researching some aspect eg: WICEN and preparing a wall chart.

During the weekend of 14th and 15th and the Monday (16th) May, the foyer of the Science Block at the school was transformed from a collection of rocks and stuffed animals to a major display area of communications equipment and wall posters. The necessary extra antennae were mounted on the roof, and the information hand-outs printed.

The equipment displays set up were: the Club Station VK4AOH operating on SSB, CW, RTTY and 2 m FM, teleprinter wire link with a microcomputer connected to a model 15, various amateur transceivers both new and old, satellite tracking with microcomputers, aircraft transceivers old and new, communications equipment from the local SES, CRS (CB equipment), interior of broadcast receivers, various electronic components, simple beginners projects including "Fun Way" kits and prototyping boards, mobile HF antennae, and operating

magneto telephones 1920 and 1950 style. The chart/poster displays were: equipment types old and new from Telecom, role of the DOC, AMSAT and satellites, WICEN, WIA and the hobby of amateur radio.



Operating VK4AOH on HF — L to R Ron VK4AGS, Tonia Williams and Allan Williams.

At lunchtime, contacts were made with schools at Dalby VK4ZPH/P, Goombungee VK4AOR/P, and Quinalow VK4KBO/P.

Between 400 and 500 people attended the display. Many of these were students from the Oakley High School. However, one local primary school brought all its students. The younger visitors were given a QSL card as a memento of the visit. Other visitors included members of the local community, members of the local SES, members of the "Help Handicapped Enter Life" project who are about to put on air their own station, and a camera crew from the local television station.

Among the many contacts made that day, some of the most memorable were with VK4ZPH (bicycle mobile), VK8HA on RTTY, YB2BLI on RTTY, the WIA(Q) Club Net, and a demonstration with RS8.

The display was featured on the local television news. In the days following, the comments received have indicated an excellent reception from all who attended.

Participating amateurs in addition to VK4AOH were VK4AGS, VK4AOR, VK4KTW, VK4NRZ, VK4AOE, VK4ZPH, VK4NGC, VK4KBO and L40971. Also involved were another thirty students at the Oakley High School who not only set up the display but played host to the many visitors.

AR



Nathan Spence (left) and Allan Williams erecting the 2 m turnstyle satellite antenna. There are seven antennae on the roof.

As word of the display spread locally, other amateurs suggested that it should be possible to arrange a "school net" for lunchtime on WCD. This was organised in consultation with the respective Principals and was conducted on both 80 m and 2 m.

The students started to assemble equipment, prepare posters and labels, and construct the necessary antennae and cables.

# WORLD COMMUNICATIONS DAY IN ADELAIDE

Photographs — VK5 Division.

David Clegg, VK5AMK  
Secretary VK5 Division  
3 Coral Sea Road, Fulham, SA 5024



*When advised in early April that we would be allowed to use AX5ITU for 17th May, the problem arose of a suitable place to use it. Several phone calls and then we were greeted with enthusiasm from Australia Post. It seemed that they were releasing a stamp for WCY 83 on 18th May, as with all new releases a display was to be mounted in the large main hall of the GPO Adelaide. We were invited to be part of this display, not only for 17th May, but the 18th to the 20th also. What a windfall, four days in the centre of Adelaide. Arrangements began.*

Antennas were the first problem. A careful reconnaissance found an existing long wire up near the 4th floor. Could we use it? Apparently, disused for many years, the coax was cut off and left lying on the roof. Access was easy (if you have the right keys) with many walkways criss crossing the galvanised iron roof. I connected the coax, fed it into an office, and tried it out on a TS820. Dismal failure. It seemed that the antenna was O/C at the feed point. Almost impossible to reach and repair. Next came a welcome offer of the use of a trap vertical. The following day it was installed on the roof, beside the clock tower. It was bolted to one of the handrails and earthed to the GI roof. Coax was fed in through the clock tower and down a tightly spiralled staircase inside, about 100 feet of coax in all. Judging by the holes carved in the doors leading to the tower, I suspect that there had been coax fed through them before. A test transmission this time showed all to be working.

This was a major hurdle overcome. For 2 metres we were to use a Slim Jim, which was left inside the building. Monday 16th was a holiday in SA so arrangements were made to gain access to the GPO that day to install all the gear. At this point I would like to thank Dave Hogben of Australia Post, Philatelic Section, for his genuine interest, and patience, in seeing all was set up OK.

Gear used was a TS820 on HF, YAESU FT227 on VHF. National Panasonic loaned us a VTR and TV to allow us to screen the tape 'Amateur Radio a National Resource'. A display of books was arranged by our Publications Officer. Various posters, copies of 'AR', local journal, QSL cards, were displayed.



L to R — Dave Hogben, Australia Post Philatelic Section and Murray Baehnisch, Adelaide Postmaster speaking on VK5AWI.

from the public. Our Divisional President, Bill VK5AWM, was autographing first day covers for people. AP made some presentations for an essay competition they had been running. For 18th to the 20th May we used VK5WI and VK5AWI as call signs. A steady stream of people came through the GPO for the rest of the week.

A unique QSL card is being produced for contacts with AX5ITU. We have obtained a supply of the WCY first day covers, and will be overprinting them as QSL cards. For contacts with VK5WI and VK5AWI, we will be using the WCY envelopes.



John VK5EV and Maurie VK5ZU operating.

Three operators were arranged for each day as a minimum, but many more were to drop in from time to time.

Tuesday 17th arrived and all operators arrived early to give the display the finishing touches. At precisely 0000 UTC, AX5ITU was on the air. That day we had 140 contacts on HF and VHF. The public showed a lot of interest and helped themselves to many of our give aways. At 11.30 (Sat) a sked was arranged with two amateurs who are also postmasters, Kevin VK5APM (Ardrossan) and Ray VK5UY (Murray Bridge). The postmaster Adelaide, Murray Baehnisch, joined in from our station, and all had an interesting QSO.

Wednesday the 18th was the day of issue for the new stamp for WCY 83. The GPO hall was crowded very early with people anxious to obtain their first day covers.

This day we had Lindsay VK5GZ operating CW. This raised a lot of interest

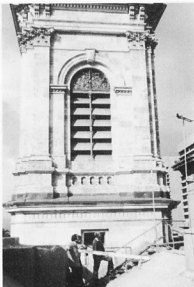


Bill VK5AWN, SA Divisional President operating.

All told we had 300 contacts. Twenty operators gave their time, and all who came along enjoyed the experience. I would like to thank all who helped in any way, by loaning gear, operating the station, or providing our station with a contact.

A lot more people in Adelaide must now be aware of what amateur radio is all about.

AR

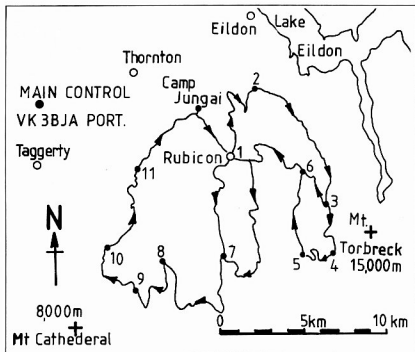


Trap vertical on roof of GPO. Maurie VK5ZU (right) and Dave Hogben of Australia Post.

# HORSE ENDURANCE TRIALS

## — a different type of Field Weekend

Ian Jackson VK3BUF and  
Andy Beals VK3KCS



A rough map of the trial route indicating radio checkpoints.



Albert VK3BQO, Ben VK3KLM and Peter VK3YZP working on the 13 metre, pump-up mast at Camp Jungai.

In central Victoria lies some of the most rugged bush terrain to be found in the State. Dense forests of native gum trees clinging precariously to the side of mountains whose height exceeds 1200 metres, quite often above the snow line.

On the weekend of the 9th and 10th of April, the Alexandra branch of APEX held its annual horse endurance trials in this area. A gruelling event, the trials consist of horses and riders embarking on either the full course of some 80 km or the younger riders and novices a 56 km trial. The trials began and ended at Camp Jungai a well established bush camp at the Rubicon Power Station.

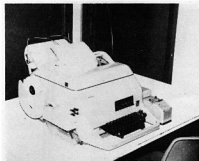
One of the main difficulties that arises in the organisation of these events is the need for reliable communications. At eleven specified points on the trial, checkpoints were stationed to monitor the passing of all contestants and assist with any difficulties which may arise. On previous trials this need had been fulfilled with varying degrees of success by CB radio using 27 MHz.

This year, due mainly to the efforts of Peter Weeks VK3YZP, who lives in Alexandra, the Gippsland Gate Radio Club

in Dandenong was invited to provide communications for the trials.

Due to the terrain over which communications need to be provided it was decided to erect a temporary VHF portable repeater and use portable or mobile 2 metre equipment at each of the checkpoints. All checkpoints reported to a radio control point operated under the club call sign of VK3BJA portable, set up at the QTH of Peter VK3YZP near Acheron. Here the information from the checkpoints was to be collated and then transmitter to the trials control point at Camp Jungai via a 2 metre radioteletype link. A 70 cm link between Acheron and Camp Jungai was provided for voice communication.

On Saturday morning two Club members Peter VK3KCS and Andy VK3KCS set off to the area of the trials to install the repeater. Using a four wheel drive vehicle to gain access to the top of Big Hill in the Royston Range the equipment was set up, but as the peak proved to be a bad RF location the next peak about 1 km away was selected. Tests from this site proved to be entirely satisfactory as the only checkpoint which could not access the repeater



RTTY receiving terminal at Camp Jungai.

had simplex communication to Control via 2, 10 or 80 metres.

While the repeater was being installed, Peter VK3YZP, Albert VK3BQO, George VK3YZG, Ian VK3BUF, Dave VK3BJV were engaged in setting up and testing the radioteletype link. The Camp Jungai end of the link consisted of a 13 metre pneumatic telescopic mast with a 6 element 2 metre Beam and a 70 cm ground plane antenna feeding into the radio equipment in the camp manager's office. This end of the operation was manned by John VK3KCE.





Views of the main camp from the surrounding valley.

The radio control point utilised the facilities of VK3YZP's radio shack. A briefing was held at Camp Jungai to inform the checkpoint operators of checkpoint locations and issue route maps and check lists.

The radio club members were well catered for and accommodated in 6 berth cabins at the camp. Saturday night's activity consisted of descending en masse on the Pizza Parlour in Alexandria. After wrapping Saturday up at 0200 on Sunday morning we arose at 0400 for breakfast, cooked to perfection by volunteers from the APEX club. The most distant checkpoints were an hour and a half's trek away and only accessible by four wheel drive vehicles.

Everybody was in position and ready by 0600 for the 0630 start from Camp Jungai of the participants on the first stage of the 80 km trial. The horses and riders in the 56 km trial got away at 0700.

As the horses passed through each checkpoint its rider jacket colour and number were noted with the exact time. This information was radioed to the control point where it was collated and transmitted via the RTTY link to the trial organisers at Camp Jungai.



Camp Jungai.

About an hour after the start of the 56 km trial one of the riders reported his horse lame to the operator at checkpoint 3 and required assistance. A request for a horse float was made which duly arrived to collect horse and rider about twenty minutes later.

A typical checkpoint consisted of a vehicle and a radio operator. The first sign of action was the sound of horse's hooves on the stony track. A group of horses appearing through the scrub triggered a frantic burst of activity noting numbers and colours on the checklist, followed by peace and quiet until the next group arrived. As

well as people already noted, checkpoints were manned by Barry VK3NJB, Noel VK3NJJ, Doug VK3VMN, John VK3DJV and Ben VK3KLM.

By 1130 all horses had completed the first stage, roughly half the course, and were back to Camp Jungai for lunch and a vet check for the horses. Some of the horse were vetted out so the second stage of the trial was completed by 1530.

As each checkpoint completed its task the operator returned to the camp; by 1600 all had arrived for a well earned meal and then to packing up for the return trip to Melbourne.

In addition to providing highly successful communication for the horse trial, invaluable experience in message handling and co-ordination was gained by all club members who took part in this very different field weekend.

Photographs by Ian Jackson VK3BUF.

AR



Radio control point where all messages were received, collated and teletyped off to Camp Jungai. Peter Weeks VK3YZP at the micro-phone.



## URGENT!

Please let us know of clubs and schools etc. starting theory classes.

Where, when, how much and whom to contact.

Contact Brenda VK3KT.



# MODERN MILITARY SURPLUS EQUIPMENT

Colin MacKinnon, VK2DYM

PO Box 21, Pennant Hills, NSW, 2120

## Wireless set C42 & C45.

*These sets are identical except for frequency range, and both use the Supply Unit Vibratory No 12 MK2. They were basically mobile to mobile, or mobile to forward base communications units. They include an intercom amplifier for communications within the vehicle.*

### VALVE LINE UP:

Serial No	Type	Function	Equivalent
V1	CV4010, CV850	RF amp	6AK5, EF95
V2	CV4010, CV850	1st Mixer	6AK5, EF95
V3	CV4010, CV850	100 kHz calibrator	6AK5, EF95
V4	CV4010, CV850	1 MHz calibrator	6AK5, EF95
V5	CV4010, CV850	reactor driver	6AK5, EF95
V6	CV4058, CV133	master oscillator	6C4, EC90
V7	CV2243	driver	
V8	CV220	power amp.	
V9	CV4010, CV850	1st IF amp 6MHz	6AK5, EF95
V10	CV4010, CV850	limiter	6AK5, EF95
V11	CV469	wideband discriminator	EA76
V12	CV469	wideband discriminator	EA76
V13	CV2128	2nd mixer/L.O 8.4 MHz	ECH81
V14	CV4010, CV850	2nd IF amp 2.4 MHz	6AK5, EF95
V15	CV4010, CV850	3rd IF amp 2.4 MHz	6AK5, EF95
V16	CV4010, CV850	1st limiter	6AK5, EF95
V17	CV4010, CV850	2nd limiter	6AK5, EF95
V18	CV469	discriminator diode	EA76
V19	CV469	discriminator diode	EA76
V20	CV4010, CV850	1st AF amp	6AK5, EF95
V21	CV4010, CV850	2nd AF amp	6AK5, EF95
V22	CV4010, CV850	1st squelch amp	6AK5, EF95
V23	CV469	rectifier	EA76
V24	CV4010, CV850	squelch amp/switch	6AK5, EF95
V25	CV4010, CV850	intercom amp	6AK5, EF95
V26	CV4010, CV850	intercom amp	6AK5, EF95
V27	CV4015, CV131	micro amp	6065, EF92
V28	CV4010, CV850	AMC amp	6AK5, EF95
V29	CV469	AMC rectifier	EA76
V30	CV4010, CV850	micro amp	6AK5, EF95
V31	CV2209	1st local oscillator	
V32	CV449	voltage stabiliser	85A2
Power Supply Unit			
V1	CV469	time delay diode	EA76
V2	CV469	time delay diode	EA76

### PRINCIPLE OF OPERATION

**Receive:** RF signals are tuned by the RF control and amplified by V1 and fed to the 1st mixer V2. The first local oscillator V31, operates at 6MHz above the signal frequency and is tuned by the CHANNEL tuning control. There is one IF amp V9 at 6MHz — then the signal goes to the 2nd mixer V13a with a crystal oscillator V13b at 8.4 MHz. This is followed by two IF stages at 2.4 MHz V14 and V15 and then into two limiters V16 and V17 which drive the narrow discriminator containing diodes V18 and V19. AF is fed through two AF amps V20 and V21. Noise from the discriminator is amplified in V22, rectified by V23, and used to switch the squelch relay via V24.

**Transmit:** The master oscillator V6 feeds V7 a driver and thence to the power amp V8 which can be tuned over the frequency range. The Master Oscillator V6 is modulated by the reactor driver V5. V32 maintains voltage to V5 constant to prevent frequency variation. Automatic Frequency Control, AFC, is derived from the limiter V10 and wideband discriminator with diodes V11 and V12.

AF from the microphone goes through two amp stages V27 and V30. Automatic Modulation Control AMC is provided by V28 and V29 to maintain the AF output constant. This AF plus a DC voltage from the AFC circuit frequency modulates V5 but limits deviation to  $\pm 15$  kHz.

There is a fan to circulate air and prevent hot spots in the set.

**Intercom:** This comprises two AF amp stages V25 and V26 switched via the harness to provide talk/listen capability within the vehicle.

**Calibrator:** Oscillator/harmonic generator V3 with a 100 kHz crystal is switched in at the CHANNEL ADJ position. In the CURSOR ADJ position V4 with a 1 MHz crystal is operative.

**Power Supply:** The PSU which is common to both the C42 and C45 is a separate unit that connects to the set via a short harness. It provides the necessary voltages and switching for the set and intercom and has overload protection.

Voltages required in the set are:

HT1 — + 175 VDC at about 150 mA for low power output

HT2 — + 350 VDC at about 140 mA for high power output

Filaments — 6.3 VAC at about 1.7 amps — receiver

Filaments — 6.3 VAC at about 1.0 amps — transmitter

Microphone — 600 ohms

Receiver:  
sensitivity — 1.25 microvolts for 10 dB quieting  
Antenna — 75 ohm via co-axial plug

IF Frequency —  
1st IF — 6 MHz  
2nd IF — 2.4 MHz

Dial Calibration — 100 kHz per division  
AF Output — 150 MW into 50 ohms

Weight —  
Approx 20 kg  
plus Approx 16 kg for PSU

Intercom Amp:  
Output — 250 MW into 30 ohm

### SPECIFICATIONS

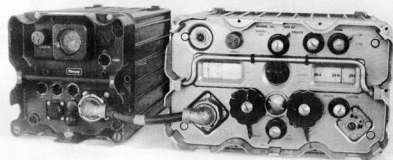
Power Requirements:  
24V DC at 8 amps Tx, 3.7 amps Rx

Frequency coverage:  
C42 — 1 band 36 to 60 MHz  
C45 — 1 band 23 to 38 MHz

Mode of Operation:  
Transmission and reception of FM

Transmitter:  
power output —  
low — 0.3-1.0 watts  
high — 15 watts approx.

Deviation — Maximum  $\pm 15$  kHz



Filaments — 12 VAC at about 0.6 amps — transmit PA  
 Filaments — 6.3 VAC at about 0.5 amps — intercom  
 Filaments — 6.3 VAC balanced to earth 0.8 A — AMC unit  
 Fan & Relays — + 24 VDC at about 0.4 amps  
 Lamps — 12 VAC at about 0.2 amps  
 Diode heaters — + 12.5 VDC at about 0.1 amps

#### FRONT PANEL POWER INTER-CONNECTION PLUG PL1

The pin connections are:  
 A — + 350 VDC HT2 high power  
 B — + 175 VDC HT1 low power  
 C — Voltage control Relay — connect to earth if less than 30V  
 D — + 24 VDC — fan and relays  
 E — Push to talk PTT line  
 F — 6.3 VAC — receiver filaments  
 G — + 24 VDC switched (used with homing loop — not described)  
 H — earth  
 J — + 12.5 VDC — wide discriminator diode heaters  
 K — No connection  
 L — 6.3 VAC — receiver filaments (common to F)  
 M — 12 VAC — transmitter PA filaments

N — earth — common to H  
 O — No connection  
 P — No connection  
 Q — 6.3 VAC — receiver filaments (common to F)  
 R — 12 VAC — lamps  
 S — earth common to H  
 T — No connection  
 U — No connection  
 V — 6.3 VAC — receiver filaments (common to F)  
 W — 6.3 VAC — intercom filaments  
 X — 6.3 VAC — AMC filaments  
 Y — 6.3 VAC — AMC filaments  
 Z — 6.3 VAC — Transmitter filaments

#### FRONT PANEL CONTROL INTER-CONNECTION SOCKET SK2

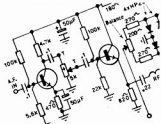
A — Tx microphone input  
 B — Intercom and Tx microphone (shield)  
 C — Intercom microphone input  
 D — PTT switch line  
 E — Automatic re-broadcast (not described)  
 F — + 24 VDC output (part of homing loop circuit — not described)  
 G — intercom and receiver speaker output (shield)  
 H — limiter grid current (for an S-meter)  
 J — intercom speaker output

K — Voltage Control relay line — connected to PL1 pin C.  
 L — + 175 VDC output for rebroadcast  
 M — receiver speaker output

#### MODIFICATIONS

- To operate the set make the following connections:  
 Microphone to pins A and B (shield)  
 PTT switch to pin D  
 PTT return to earth  
 S-meter to pin H  
 S-meter return to earth  
 Speaker to pins G and M
- The PSU provides a suitable box for a 240V power supply. Although there are a number of outputs shown they can be obtained from a fairly common although large valve type transformer with a 350V secondary plus 12V and 6.3V. The 24V for the relays may have to come from a separate transformer.
- There is a little more space on and behind the front panel so sockets for mic, speaker and S-meter can be fitted to the panel. This leaves the space at SK2 socket for fitting an audio volume control. A 1 megohm pot is wired with shielded wire to replace RV1 on the AF sub-unit.  
 Para 3A To connect the centre zero tuning meter in line for Rx and Tx connect contact 4 to contacts 1 and 2 on switch bank SWA1 (the calibration switch). If your transmit frequency does not match the receive frequency adjust trimmer capacitor C49.
- The C42 is very suitable as it is for the 6 metre band and has been used recently in two cases I know of for contacts with Japan. The C45 can be used on 10m FM provided you narrow the deviation to  $\pm 3$  kHz by adjusting RV3 on the AMC unit. Ideally this should be done using a deviation meter but can be achieved by listening to a voice signal from the C45 on a SSB receiver and adjusting RV3 to a point just prior to the signal distorting. The IFs can be adjusted to narrow the response band.
- It should be possible to obtain the 100 kHz transmit shift to suit the FM repeaters by switching capacitance across L10 in the circuit of V6 the Master Oscillator. You may also have to add capacitance across the tuned circuits of L12 and L15 in the V8 circuit. Perhaps varicaps could be the best method of obtaining these capacitances.

AR



#### CIRCUITS

The Circuits of the equipment in this series of articles are held in the Federal Office.

Photocopies may be obtained by writing to the Secretary WIA at PO Box 300 South Caulfield 3162. To defray the costs of this service a suitable donation would be appreciated.

#### Remember Photo Competition



The AGFA Competition begins this month. Check May AR, page 6, for details.



#### HELP PREVENT PIRATES

Keep bands for licensed amateurs.

DO NOT sell transmitting equipment to unlicensed operators.



# EQUIPMENT REVIEW

Ron Fisher VK3OM  
3 Fairview Avenue, Glen Waverley, Vic 3150

## THE KENWOOD TR-7950 TWO METRE FM TRANSCEIVER

The first two metre FM transceiver reviewed in 'Amateur Radio' was the Kenwood TR-7200 back in September 1975. I was so impressed with that transceiver that I bought one and it is still in current use as a mobile rig. I might also mention that it has given no trouble of any kind over the years. Whether or not I replace the old 7200 with this new TR-7950 remains to be seen but I am even more impressed with the performance and general capability of the new Kenwood than I was at the time with the old one.

### THE TR-7950 DESIGN FEATURES

With a forty five watt output capability, the 7950 is somewhat larger than other current model FM mobile transceivers. It is however both lighter and more compact than the old original TR-7200 mentioned above. Overall measurements are 175 mm wide, 64 mm high and 220 mm deep. Weight is 1.8 kg. Output power is selectable for either 45 or 5 watts. But perhaps the most interesting part is the method of frequency selection and memory storage. Where in the past, most synthesised two metre transceivers used a tuning system with perhaps five or ten kHz steps and then a memory capability to back this up, the 7950 is perhaps the reverse of this. What appears to be the main tuning knob is, in fact, the memory selector with these frequencies being initially set up using the keyboard. If a frequency other than one chosen for memory operation is required then this can also be selected with the keyboard. In addition to this there are comprehensive scanning facilities for both the memories and general band scanning.

The twenty one memories can be programmed for either duplex with plus 600 kHz, duplex minus 600 kHz or for simplex operation. Once this has been initially selected and entered into the memory it is not necessary to select the repeater offset or simplex operation. Regardless of the offset chosen for repeater operation, a front panel button will give reverse repeater operation.

The frequency read out and memory channel indicator is a large and brightly illuminated liquid crystal display which is highly readable under all external lighting conditions. This same readout also shows if a + or - repeater offset is in operation or if simplex or scan modes have been chosen. While not applicable to Australia as yet, the keyboard will also act as a dialer for auto patch (telephone dialling through a suitable repeater). As each function is entered into the keyboard, a beeper indicates that the

processor has actually received the command.

When the 7950 is in operation, the front panel appearance is most impressive. The LCD readout is rear illuminated with a soft green glow. There is a LED strip indicator for receiver S meter and transmitter power output, with LED indicators for reverse operation, priority channel operation and centre tuning. The key board is illuminated from above with a green strip light and the memory selector knob has a green illuminated surround when the memory facility is in operation.

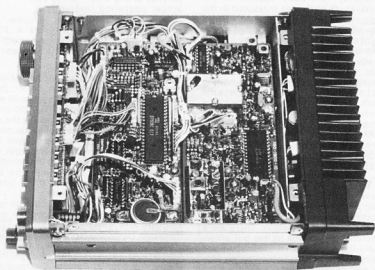
Once a memory has been entered, it is there on a permanent basis. The micro-processor is powered from a lithium battery

for which Kenwood claim a five-year life. This means that should the power supply be turned off as would normally happen with home station use, all memories are retained and the frequency last in use will reappear when switched on again.

The TR-7950 is supplied with an excellent mobile mounting bracket and a hand held microphone with up/down scan buttons incorporated.

One thing that is required if you intend to operate from home, is a good ten amp power supply. Current drain with 45 watts output is rated at 9.5 amps and, as we shall later see, is in fact a little higher than this. A matching power supply is available from Kenwood, the KPS-12 which has a rating of





Underside View

10 amps continuous and 12 amps peak output. The Kenwood PS-30 is also very suitable.

#### THE TR-7950 TECHNICAL DESCRIPTION

Unfortunately, apart from the circuit diagram, no description of circuit operation is included in the instruction manual. However it would appear that the circuit is fairly conventional with a double conversion set up using 455 kHz and 10.695 MHz. High SWR protection is provided for the transmitter final transistors, and the output power is gradually reduced as the SWR increases. Frequency selection, memory control and all the other ingenious functions are controlled by a four bit micro-processor which in turn controls the PLL circuitry of the transceiver. Kenwood claim superior performance resulting from "The most advanced KENWOOD engineering technology". As we shall later see, they have a point.

#### THE TR-7950 ON THE AIR

As mentioned earlier a good solid power supply is needed to power the 7950. If you already have a fully solid state HF transceiver, then you possibly have a suitable power supply to share between the two. Otherwise you should have a supply capable of delivering 13.8 volts at 10 amps or more with good regulation. For receive only, current drain is about 600 to 700 mA. The receiver volume and squelch controls are concentrically mounted on the left hand side of the front panel. The power on/off switch is combined with the volume. My old 7200 had a push on/push off power switch which was most convenient. One could leave the audio output level set. The new Kenwood has reverted to the old style rotary on/off/volume setup. Not so good.

The first thing to do with the transceiver operating is to programme the memories.

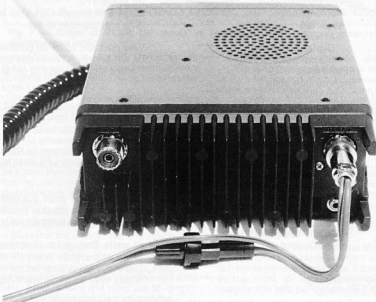
They are set up on the keyboard and then entered by selecting the required memory channel and then simply pushing the 'M' button. It should be noted that while there are twenty one memory channels, four of these are paired to use for non standard repeater offsets. In practice this means that for simplex operation, the same frequency has to be entered into each of the two channels or four repeater use, the input frequency is entered into one channel and the output into the other. In other words there are only nineteen usable memory channels.

One of the nice features of many of the

new FM transceivers is the priority channel alert. With the TR-7950 any one of the memory channels can be selected as the priority channel. The priority is then automatically checked every five seconds and if a signal appears a double 'beep' is emitted from the speaker. It is then only necessary to push the priority 'OPER' button to give immediate operation on the priority channel.

With around 140 watts going into the transceiver (13.8 V at nearly 10 amps) it's not surprising that things get hot. After a two minute over (some people talk even longer) the heat sink at the rear for the final amplifier gets rather hot. I did not use the transceiver mobile but used in a hot car during some of the days we have had in Melbourne over the last few months, you would need to be careful in positioning the transceiver. Sitting it on a vinyl seat, for instance, could be dangerous. As I do not have a suitable signal generator to check actual receiver sensitivity, I always do a side by side comparison with my normal shack two metre transceiver. I have yet to find a transceiver that displays any noticeable improvement in receiving ability — until now. The TR-7950 was able to produce intelligible copy from signals that were not copyable on my transceiver. Noise limiting also appeared to be first rate and well ahead of most. Perhaps the only criticism on the receive side is that the 'S' meter (LED type) is so generous as to be quite useless in giving meaningful reports. So long as the signal was audible the indicator showed S9 or more. It looks pretty, but give me a proper meter any day.

The operation of the scanning system is quite remarkable. One could spend hours just playing with this function alone. You have several choices. A band of frequencies can be scanned, the upper and lower limits



Rear View

can be chosen and entered via the keyboard. When the transceiver senses a busy channel, will stop and hold on that signal for either five seconds or until such time as the channel becomes vacant. Normal pauses between overs will not allow scanning to resume. These two scan methods are selectable with a front panel control. Memories can be scanned in a similar manner but now with the addition of the priority system mentioned earlier.

On air reports of transmitted audio were all satisfactory. I listened to the rig when operated by a friend and found the quality to be clean but with a slight high frequency peak that caused known voices to sound slightly unnatural. As quality is a subjective thing, others may not agree with this.

Received audio quality was rated better than average for home station use, however the top mounted speaker is unsuitable for under dash mobile installation and an external speaker would be an essential mobile operation. Audio output power is rated at two watts and although not actually checked, sounded loud and clear during our subjective tests.

Transmitter power output was checked on our YP-150 dummy load watt meter and

with exactly 13.8 volts applied to the transceiver, 48 watts was measured in the high power setting and the rated 5 watts in the low power position. As reported earlier the current drain with full power output was 10 amps.

Finally a comment on the scanning system. One of the problems with most scanning transceivers is that the scanning tends to stop as soon as a signal opens the squelch. In the case of a strong signal this might be five or ten kilohertz off turn with resulting noise and distortion. Not so with the TR-7950. The scanner will not stop until the discriminator senses centre signal. A nice touch. At this same point the centre tune LED will light.

#### THE TR-7950 INSTRUCTION MANUAL

It seems that as the quality and performance of equipment improves, the instruction manuals that accompany them go in the opposite direction. There are a few notable exceptions to this but unfortunately the Kenwood TR-7950 is not one of them. A total of only sixteen pages plus block and schematic diagrams cover the whole thing. There is not a word of alignment, circuit description and main-

tenance of any time. Having said that, the actual operating instructions are well covered and in general easy to follow.

However, I do believe that a \$500 (approx) transceiver deserves something better than this. How about it Kenwood?

#### CONCLUSION

If you are in the market for an FM only two metre transceiver with better than normal performance on both transmit and receive then the Kenwood TR-7950 must rate top consideration. I guess it's the old story, pay a little more and get a little more. As far as I can see it out performs the opposition by a very noticeable margin. On the other side, it is also larger than most of its opponents and along with the top mounted speaker, could pose some problems mounting it in a car.

General quality of construction is very good and all the controls operate in a smooth and satisfying manner. The Kenwood TR-7950 is highly recommended.

Our review transceiver was supplied by KENWOOD (AUSTRALIA) through their Melbourne agents, Eastern Communications.

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### EVALUATION AND ON AIR TEST OF THE KENWOOD TR-7950

CATEGORY	RATING	COMMENTS
APPEARANCE		
Packaging	**	Carton with foam inserts.
Size	***	Relative to output capability, very good.
Weight	****	Only 1.9 kg.
External Finish	***	Good quality paint. No rough edges.
Construction quality	***	Very hard to fault.
FRONT PANEL		
Location of controls	***	Simplified controls well laid out.
Size of knobs	***	All knobs and buttons easy to use.
Labelling	**	Quite satisfactory.
Meter	**	LED type. Colourful but not accurate.
VFO knob	NA	No actual VFO.
Memory knob	****	Large with smooth click stop action.
Keyboard	***	With practice easy to use.
Dial readout		
Digital	****	Very readable under all conditions.
Status indicators	***	On air, priority, reverse and centre tuning.
REAR PANEL	**	Limited facilities easy to get at.
Receiver Operation		
VFO stability	***	
Memories	****	Number and selection best yet.
Sensitivity	****	On comparative test, the best yet found.
Noise rejection	****	High noise rejection.
Squelch action	**	Progressive action.
'S' meter	**	Of limited use. All signals S9.
Signal handling	****	No problems with adjacent channel signals.
Spurious responses	****	None heard.
QUALITY OF RECEIVED AUDIO		
Internal speaker	**	Quality of audio good. But placement poor for mobile operation.
External speaker	NA	External mobile speaker offered as option but not tested.
Headphone output	NA	No provision for headphones.
TRANSMIT OPERATION		
Power output	****	48 watts. Enough for all occasions.
Audio response	***	Clean with slightly peaky HF response.
Metering	***	LED meter gives clear output indication.
Cooling	***	Would need watching while mobile in hot weather.

Rating code: Poor \* Satisfactory \*\* Very Good \*\*\* Excellent \*\*\*\*



# EQUIPMENT REVIEW

Ron Cook, VK3AFW  
TECHNICAL EDITOR  
7 Dallas Avenue, Oakleigh, Vic. 3166

## THE MOBILE ONE HAMTENNAE — Model M10-1

So you are thinking about going mobile and are wondering about which band and what antenna. Why not try ten metres? You can do everything that can be done on CB, without the QRM. For the antenna the M10-1 made by Mobile One would be hard to beat.

The first impression one has of the Hamtennae M10-1 is of its very sturdy appearance. It certainly looks capable of handling a 1 kW rig, even if your battery can not.

The mobile whip supplied for review was just under 1.5 metres in length (60 inches for all OTs). It has a standard (imperial) 5/16 inch, 24 TPI female threaded base and a helical wound coil covered in a shrink-on plastic tube. The bottom of this coil has a wide pitch with a close wound coil at the top. Whereas most mobile antennae have a tapered fibreglass former this one is of uniform diameter. Fine tuning is done by means of a short length of stainless steel rod fitted at the top.

Thus we have a solid looking compact structure. Because of the forty percent reduction in height (useful for getting under tram wires, etc) some reduction in bandwidth might be expected, as well as a worse match. The helical winding is designed so as to minimise these problems. A fairly heavy gauge of wire is used to keep the efficiency high.

### ON TEST

The M10-1 was mounted on the centre of the roof of a station wagon and the length of the tuning rod reduced three millimetres (1/8 inch) at a time, by the appropriate application of a hacksaw, until resonance was obtained at 28.50 MHz. The VSWR was measured across the range 28 to 29 MHz and the results plotted on a graph (see Figure 1). A smooth curve was fitted to the results to minimise the errors due to SWR bridge inaccuracies, weak eyes, etc. The 1.5:1 VSWR bandwidth would seem to be about 1.5 MHz! Phone only operators may prefer to resonate the whip a little higher. Certainly there is little need to stop the car and readjust the whip for every frequency shift.

Unfortunately band conditions were not very good during the test period although signals from W and JA were available. The M10-1 gave noticeably better signals than a slightly longer bumper-mounted whip, even when the vehicle was aligned to give the most favourable report for the bumper-mount.

Conditions were such that the amount of improvement was difficult to gauge but it

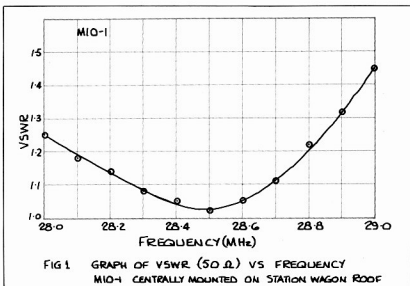


Fig 1 — Graph of VSWR (50 ohms) Vs Frequency. M10-1 centrally mounted on a station wagon roof.

seemed to be around 3 dB. On occasions there was no difference, on others, quite a considerable difference. At no time was the M10-1 inferior.

The VSWR of the other whip was similar at resonance but the VSWR bandwidth was noticeably less. The reference whip has been tested on numerous prior occasions against other verticals, dipoles and beams and has been found to give a good account of itself. Thus it can, with some confidence, be stated that the Hamtennae M10-1 would not be noticeably inferior to a full size quarter-wave whip mounted in the same position.

### OTHER REMARKS

Note that the knurled nut and coupling at the top of the M10-1 allows about ten millimetres variation of the length of the steel whip top thus enabling easy fine tuning of the resonance over perhaps  $\pm 200$  kHz. After cutting the whip top to length, any burrs should be filed off and the edge given a small chamfer.

This whip is not flexible. When the vehicle is in motion it does not bend like junior's fishing rod when it has a nine metre shark on the other end; it remains vertical. In this regard it is similar to other makes which use metal tube construction.

Unfortunately this could lead to problems if you hit a low branch. Either a "knock-down" mount or a bumper mounting could solve this problem. For such a solid antenna, particularly without a "knock-down" mount, a large diameter thread for the mounting may have been preferable. Of course these are personal opinions and it would mean that the convenience of using the standard VHF mount was lost.

### CONCLUSION

The Mobile One Hamtennae M10-1 is a high performance mobile whip. I was sorry to have to hand it back. Now if they would do the same for other frequencies . . . imagine 300 kHz bandwidth on 7 MHz.

73 de VK3AFW  
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# FEDERAL CONVENTION — 1983

The 47th Annual WIA Convention was held in Melbourne from the 23rd to 25th of April 1983 at the Brighton Savoy Motel.

Convention guests at a dinner function on Sunday, 24th were members of the DOC Executive, Mr John McKendry, Canberra and Mr Gavin Brain, Regulatory Branch, Melbourne.

Mr McKendry briefly described his area of responsibility within the DOC to the delegate by way of an introduction and then the President, Bruce Bathols, VK3UV, acted as chairman in an informal question and answer session, covering such items as Channel 0, the 50 MHz window, the Broadcasting Council, Cable TV, Subscriber TV and Radio Australis.

Delegates at the convention were from each division — a Federal Councillor and an Alternate Councillor, with VK2, 3 and 5 bringing observers. All members of Executive attended, in addition, Dr David Wardlaw, VK3ADW and Michael Owen, VK3KI were present at various times. Members of Executive Sub-committees and Co-ordinators attended to answer questions relating to their specialised subjects.

During the course of the Convention, a special resolution was passed to amend the Articles of Association of the Institute to enable the size of the Executive to be increased — it was felt that, due to the increasing work load and need for expertise in specialist areas, the Executive should now consist of nine members and the President.

New members of the Executive are Dr David Wardlaw, VK3ADW, who has been attending meetings in his capacities of Immediate Past President and IARU Liaison Officer, Jack O'Shannessy, VK3GP who has been a co-opted member of the Executive for the past twelve months, Alan Foxcroft, VK3AE who is the Executive representative at the Standards Association Committee — SAETEC, Gil Sones, VK3AUI editor of Amateur Radio, Bill Rice, VK3ABP currently chairman of FTAC and CASPAR and a regular attendee of Executive meetings.

Members re-elected are Peter Wolfenden, VK3KAU, Courtney Scott, VK3BNG, Ken Seddon, VK3ACS and Earl Russell, VK3BER. The only retiring member of the Executive was Harold Hepburn, VK3AFQ and this is due to business relocation.

The statutory business of the Institute was carried out as required by the Companies (Victoria) Code — ie the adoption of the accounts and Executive reports. These are reported in full at the end of this article. Some twenty one agenda items proposed by the Divisional delegates were debated, plus motions arising from the co-ordinators reports and general business.

The Remembrance Day Contest Trophy was presented to the VK5 Division by the President, Bruce Bathols, commenting that VK5 appeared to have a monopoly on the trophy.

After lunch on Monday 25th, the VK6 Division Federal Councillor Neil Penfold, VK6NE presented a special certificate from the VK6 Division to Dave Shaw VK3DHF/VK0HI for his efforts on the Heard Island Expedition.

Annual Reports by the Federal Co-ordinators were dealt with at length, some Co-ordinators being present to answer queries and accept congratulations on their work over the past twelve months. As in previous years, the IARU Report was discussed with interest by the Federal Councillors and a motion arising was passed for the WIA to strongly support the Region III directors in relation to the restructuring of the IARU.

Of the twenty one agenda motions, the item of greatest interest to all amateurs was the discussion of the Radio Communications Bill '83 and the WIA's submission regarding it. During the long debate several areas of concern were highlighted, such as the use of amateur bands by unlicensed operators, the possession of substandard transmitters/receivers and the powers of radio inspectors. Space does not permit full reporting of this discussion.

A proposal to amend the wording in future Gentleman's agreements from "CW only" to "telegraphy only" was amended after debate to "Narrow Band Modes" by the Federal Council and agreed upon.

The question of World Communications Year '83 and Public Relations was discussed as a result of an agenda item and the Council decided to investigate, through the Executive, the making of a film on amateur radio by a group of experienced film makers, for use in publicising the hobby at all levels.

Overseas membership of the Institute was debated by the Council and there was general agreement on the policy to accept overseas members. The detail of how to achieve was left to the Executive to investigate and report.

Two motions to give significant recognition of the 75th anniversary of the WIA in 1985 and the Australia Day celebrations were both carried after debate.

The need for an International Amateur Licence was debated and the Executive were instructed to continue to pursue this matter further.

## REPORTS

### THE WIRELESS INSTITUTE OF AUSTRALIA A COMPANY LIMITED BY GUARANTEE INCORPORATED IN VICTORIA UNDER THE COMPANIES (VICTORIA) CODE

In accordance with the Companies (Victoria) Code, the Executive state the following:

(a) The names of the Executive in office at the date of this report are:

B R Bathols	VK3UV
P A Wolfenden	VK3KAU
K C Seddon	VK3ACS
C D H Scott	VK3BNG
H L Hepburn	VK3AFQ
E R Russell	VK3BER

(b) The principal activity of the Wireless Institute of Australia is to:

- 1 Represent generally the views of persons connected with amateur radio in the Commonwealth of Australia, its territories and dependencies.
- 2 Promote the co-operation between the Divisions in the encouragement and development of amateur radio.
- 3 Safeguard the interest of the Divisions and the members in relation to frequency allocations rights and privileges.
- 4 Promote the development progress and advancement of amateur radio in all matters in relation to amateur radio in general.

(c) The deficit of income over expenditure for the year ended 31st December 1982 was \$15,297 compared with a surplus of \$16,793 for 1981. There is no provision for income tax required as the company is exempt under Section 103A (2)(c) of the Income Tax Assessment Act.

(d) During the year provisions were decreased:

- 1 Provision for holiday and long service was decreased by \$6518 to \$6366.

- 2 Provision for Superannuation — Decreased by \$9685 to NIL.

(e) The Executive have taken reasonable steps, before the Statement of Income and Expenditure and Balance Sheet were made out, to ascertain that action had been taken in relation to the writing off of bad debts and making of provision for doubtful debts and to cause all known bad debts to be written off and adequate provision to be made for doubtful debts.

(f) At the date of this report the Executive are not aware of any circumstances which would render the amount written off for bad debts or the amount of the provision for doubtful debts inadequate to any substantial extent.

(g) The Executive before the Statement of Income and Expenditure and Balance Sheet were made out, took reasonable steps to ascertain whether any current assets, other than debtors were unlikely to realise in the ordinary course of business their value as shown in the accounting records of the Institute.

(h) At the date of this report the Executive are not aware of any circumstances which would render the values attributed to current assets in the accounts misleading.

(i) At the date of this report no charges exist on the assets of the Institute which has arisen since the end of the financial year and does not secure the liabilities of any other person.

(j) There does not exist any contingent liability which has arisen since the end of the financial year.

(k) No contingent liability or any other liability has become enforceable within the period of twelve months after the end of the financial year which in the opinion of the Executive will or may

effect the ability of the Institute to meet its obligations when they fall due.

(l) Since the end of the previous financial year the Executive have not received or become entitled to receive a benefit by reason of a contract made by the Institute or a related corporation with the Executive or with firms of which they are members or with companies in which they have substantial financial interests.

(m) The results of the Institute's operations during the financial year were in the opinion of the executive not substantially affected by any item, transaction or event of a material and unusual nature. There has not arisen in the interval between the end of the financial year and the date of the report any item, transaction or event of a material and unusual nature likely in the opinion of the executive, to effect substantially the results of the Institute's operations for the next succeeding financial year.

Dated at Melbourne this 25th day of March, 1983.

# MEMBERS OF THE EXECUTIVE

(signed) B R Batholls  
(signed) C D H Scott

## STATEMENT OF INCOME AND EXPENDITURE FOR YEAR 31ST DECEMBER 1982

	1982	1981
<b>INCOME</b>		
Members subscriptions	\$151,258	\$133,006
Interest Received	20,873	10,850
Surplus — Magpuols Book Sales	6,479	15,065
Donation — WARC/Other	115	24
	<u>178,725</u>	<u>158,945</u>
<b>EXPENDITURE</b>		
Amateur Radio — NOTE 1	100,042	61,322
AMSAT		438
Audit Fees 1982	1,000	
1981	300	900
1979/80		300
Award Payments	7	230
Bank Fees	743	240
Bad Debts	622	496
Committee Expenses	1,172	1,092
Convention Expenses	7,515	6,256
Depreciation	975	1,147
Electricity	819	729
EDP Expenses	5,470	4,950
General Expenses	382	426
Insurance	1,053	970
IARU Dues	3,119	821
IARU Donation	500	
IARU Travelling and other expenses	5,039	40
Licences and Fees	17	6,747
Membership Recruiting	137	5,143
Postage and Freight	7,412	2,803
Printing and Stationery	3,681	3,471
Rent and Rates	4,718	660
Repairs and Maintenance	809	39,194
Salaries and Secretarial	45,094	1,000
Superannuation	704	
Telephone	2,195	1,070
Travelling and Sundry Expenses	496	1,707
	<u>194,022</u>	<u>142,152</u>
<b>NET SURPLUS (DEFICIT)</b>	<u>(15,297)</u>	<u>16,793</u>
Accumulated Funds Brought Forward	55,927	38,105
Add IARU Fund Brought Forward		1,029
	<u>\$ 40,630</u>	<u>\$ 55,927</u>

## NOTES TO AND FORMING PART OF THE ACCOUNTS

	1982	1981
<b>NOTE 1: AMATEUR RADIO: Income</b>		
Advertising	\$ 30,673	\$ 26,545
Subscriptions and Sales	2,610	2,054
Inserts and Sundry	2,303	2,725
	<u>35,586</u>	<u>31,233</u>
<b>EXPENDITURE:</b>		
Awards		255
Debt Collection	73	43
Postage	19,494	13,175
Publishing Costs	95,526	65,391

Salaries	16,146	11,573
Travelling and Sundry Expenses	4,389	2,118
	<u>135,628</u>	<u>92,555</u>
Excess expenditure transferred to General Account representing Cost of AR to Members	\$100,042	\$ 61,322

## NOTE 2:

<b>RON WILKINSON ACHIEVEMENT AWARD:</b>		
Balance brought forward	\$ 1,383	\$ 1,273
Add Interest	172	160
	<u>1,555</u>	<u>1,433</u>
Less Award Payment	50	50
<b>BALANCE CARRIED FORWARD</b>	<u>\$ 1,505</u>	<u>\$ 1,383</u>

## BALANCE SHEET AS AT 31ST DECEMBER, 1982

	1982	1981
<b>MEMBERS' FUNDS:</b>		
Accumulated Funds	\$ 40,630	\$ 55,927
Add ITU/WARC	533	533
	<u>41,163</u>	<u>56,460</u>
Special Fund — Ron Wilkinson Achievement Award NOTE 2	1,505	1,383
	<u>\$ 42,668</u>	<u>\$ 57,843</u>

## Represented by:

<b>CURRENT ASSETS:</b>		
Cash on hand	112	41
Commonwealth Trading Bank	(1,150)	14,585
Short Term Deposits	162,536	40,382
Australian Savings Bonds		10,000
Australian Resources Development Bank	5,800	8,000
RESI Building Society		922
Sundry Debtors — Less Provision for Doubtful Debts (\$2,000)	11,832	11,931
Stock on Hand — At Cost	11,217	9,206
Prepayments		626
	<u>190,347</u>	<u>95,693</u>

<b>NON CURRENT ASSETS:</b>		
Furniture and Fittings — At Cost less Provision for Depreciation	5,531	6,506
	<u>195,878</u>	<u>102,199</u>

<b>LESS CURRENT LIABILITIES:</b>		
Sundry Creditors	1,000	900
Subscriptions in Advance	142,372	17,415
Provisions — Superannuation		9,685
— Amateur Satellites	2,972	2,972
— Holiday and Long Service Leave	6,366	12,884
Deposit VK4	500	500
	<u>153,210</u>	<u>44,356</u>
	<u>\$ 42,668</u>	<u>\$ 57,843</u>

## AUDITORS' REPORT TO THE MEMBERS OF THE WIRELESS INSTITUTE OF AUSTRALIA.

1 In our opinion, the accompanying accounts, which have been prepared under the historical cost convention, are properly drawn up in accordance with the provisions of the Companies (Victoria) Code so as to give a true and fair view of:

(a) The results of the Institute for the year ended 31st December 1982 and the state of its affairs at that date.

2 The matters required by Section 269 of that code to be dealt with in the accounts.

(b) The accounting records and other records and registers required by the Code to be kept by the Institute, have been properly kept in accordance with the provisions of that Code.

HEBARD & GUNNING  
CHARTERED ACCOUNTANTS  
(signed) P W Hebard  
Partner

Melbourne  
25th March 1983

## REPORT OF THE EXECUTIVE

It is with pleasure that I present this Report of the Executive for the year 1982.

## 1 OVERVIEW

1.1 The Institute has made considerable progress during the past twelve months. As a measure of this, I am pleased to report that membership has increased from 8074 to 8570, while the number of DOC amateur licences issued has remained substantially unchanged. More Limited/Novice licencees are taking advantage of the "K" (combined) licences and this has some effect on the statistics.

1.2 The results of the "CB boom" have passed and membership increases are now largely due to the concerted efforts of members, and through them the image presented of the WIA.

1.3 Increased membership and the consequent activities associated with improving our organisation — ('Amateur Radio', Government representation, etc) has increased the workload on the Federal office and officers, both paid and volunteers.

## 2 HIGHLIGHTS FROM THE YEAR

2.1 Increased membership during a period of economic downturn.

2.2 Release of WARC 79 amateur bands — our good results being the culmination of many years work by the Institute.

2.3 Preparation and distribution of the Federal Councillors Handbook, incorporating policy statements.

2.4 Increased production standard of 'Amateur Radio' magazine.

2.5 A start made on an organised Public Relations Campaign.

2.6 A position being obtained on a Standard Association Committee dealing with EMC matters.

2.7 Responsive and cordial relationship with the Department of Communications.

2.8 Visit to our 1982 Federal Convention by the President of the NZART, Mr A G Godfrey, ZL1HW, and NZART IARU Liaison Officer, Mr J C Pye, ZL2NN.

2.9 Retirement of Mr Peter Dodd, VK3CIF, as Secretary/Manager.

## 3 MEMBERSHIP

3.1 Membership of the Institute has increased by 6% overall and 7% for licensed amateurs, while DOC licences issued have remained substantially unchanged during the past twelve months.

3.2 In fact DOC licences issued have decreased from 14,750 in 1981 to 14,716 in 1982. According to DOC figures significant decreases of about 10% occurred in both the ACT and Victoria.

3.3 NSW has now overtaken Victoria in having the largest amateur population, although Victoria still has the largest number of WIA members.

3.4 It could be that DOC licence figures are not all up to date, as the reversal in both ACT and Victoria is in opposition to the national trend.

3.5 It remains however, that there has been no apparent net growth in licences for the year. We must be prepared to take some positive action in attracting people to amateur radio or suffer the consequences of increased costs and decreased standing in the years to come.

- 3.6 There is little point being introverted about public relations in this situation. Publicity on broadcasts and in Amateur Radio magazines will achieve little, but obviously some activity must remain if WIA membership is to continue to grow.
- 3.7 Ways and means of finding new amateurs are needed and perhaps a concentrated effort on schools and colleges needs consideration. Other avenues require exploration also. Positive ideas are called for.

#### 4 FREQUENCY ALLOCATIONS

- 4.1 Australia was amongst the first countries to release the 30 m band allocation to amateur service on 1st January, 1982.
- 4.2 Less than twelve months later on 16th December, 1982 the Australian Table of Frequency Allocations — the table resulting from WARC79, was released, and from that date Australian amateurs were permitted access to the new bands at 18.068 — 18.168 MHz, 24.890 — 24.990 MHz, and new allocations at 47, 75, 120, 142, 244, 441, and 248 GHz.
- 4.3 Additional spectrum was allocated on an exclusive or shared basis at 1825-1875 kHz, 3794-3800 kHz, 7100-7300 kHz, and 3500-3600 MHz.
- 4.4 1215-1240 MHz was withdrawn from the amateur service worldwide.
- 4.5 The band 50-52 MHz was also allocated to the amateur service but subject to conditions which have not yet been finalised with the DCC. At the time of preparing this Report, it would appear that a further hiatus has been introduced by the broadcasters.
- 4.6 Full details of the new allocations were published in the January and February issues of Amateur Radio magazine together with spot frequencies to be avoided.
- 4.7 Only limited use has been made of the new allocations to date, however, in time, and as other countries make the allocations available to amateurs, these bands will become more popular.
- 4.8 It is worth noting the acknowledgement paid by Mr Ross Ramsay, First Assistant Secretary, DCC, to the Institute for its efforts in the frequency table work.
- 4.9 LET EVERY AMATEUR BE AWARE OF THE SIGNIFICANT WORK DONE BY THE WIA IN THIS MATTER — IT WAS NO SMALL EFFORT!

#### 5 LICENSING

- 5.1 Licence Fees were again increased during the year. Full and limited licences from \$17 to \$18 and novices from \$10 to \$15.
- 5.2 Sticker Licensing — of great concern at the time of last year's Convention, now has slipped into "the bottom drawer" where hopefully it will remain!
- 5.3 Radio Communications Licence Fees Act 1982 and Radio Communications (Miscellaneous Provisions) Act 1982.
- 5.3.1 On June 8th, 1982 the Institute received a rather formidable letter from DCC requesting urgent consultation on these Acts.
- 5.3.2 Of major concern, was that it appeared the legislation could be used as a taxing vehicle by Government — with significant implications for the amateur service. We understood that factors of spectrum usage,

such as bandwidth, service area, power levels, etc. were to play some part in the determination of licence fee levels.

#### 5.3.3 Following discussions with senior DCC officers, the Institute submitted:

- (a) That there should be no immediate increase in fees and that future increases should not exceed CPI increases for the previous year;
- (b) That amateur licence fees should be set at no greater level than that which represents a reasonable and proper cost recovery and that operations of cross subsidisation are not relevant to the amateur radio service.

5.3.4 Examination fees and credit retentions were also discussed, with the Institute maintaining that examination fees should not inhibit potential candidates and should be fair and reasonable.

5.3.5 Novice licence section credits should be retained for a two year period, while candidates for higher licence sections should retain that part of the qualification represented by those sections that have been passed.

5.3.6 The Institute rejected the proposal that a fee should be charged for the issuance of a Certificate of Proficiency.

5.3.7 To date, most of these aspects have been resolved satisfactorily or are still under consideration and discussion.

#### 6 REPRESENTATION TO THE DEPARTMENT OF COMMUNICATIONS

The following were amongst the matters discussed with DCC central office:

*Australian Table of Frequency Allocations — released.*

*RTTY Identification — Dual Ident not now required.*

*Examination procedures — ongoing.*  
*Morse tests at higher speeds — under discussion.*

*AX ITU for Divisional use on 15th World Telecommunications Day, 1983 — agreed.*  
*AX Prefix also available for all VK amateurs on 15th World Telecommunications Day, 1983.*

*50-50.15 MHz — still under discussion.*  
*Visitors Special Callsign — under discussion.*

*Licensing Information for Overseas Visitors — now available.*

*Cable TV — possible problems.*  
*Callsign retention period — 2 years deceased, 6 months others.*

*Prosecutions reporting — contact with Canberra.*

*Publication of Distress Procedures — in AR, Callbook.*

*Possible use of Morse on VHF by K Licenses.*

*Non mandatory log keeping — nearing conclusion.*

*Chess on the Air — under discussion.*  
*Reduction in age limits for AOCPL licence (14 years).*

*Departmental Monitoring.*  
*Reciprocal Licensing — Japan, Italy, Greece and Denmark.*

*Identification of Examination Candidates — presently not an issue.*

*Emission Designations — not now to be included on licence.*

*WCY83 — National Committee to be established.*

*Sticker licensing — not currently an issue.*

#### 7 PUBLIC RELATIONS/WCY83

7.1 Some worthwhile PR was obtained for amateur radio during the past year — some of which filtered through to the general public.

7.2 Two major events which obtained national media coverage were the Commonwealth Games Station AX40CG and the Heard Island Expedition.

7.3 The VK5 Division produced an excellent set of PR guidelines for WCY83 which Executive considered encompassed the requirements laid down at last year's Federal Convention. The VK5 document (with their permission) was subsequently endorsed by Executive and circulated to all Divisions for use as a guide in their activities. We wish to again thank Louise and John Badcock of the VK5 Division for their unselfish efforts in the interest of amateur radio.

7.4 During the year, John Hill, VK3DKK (AR Advertising), was appointed as interim PR co-ordinator. Considerable time has been devoted to the need and appointment of a Federal Public Relations Co-ordinator. Ideally, we need a retired professional public relations person who is also a knowledgeable amateur and who is prepared to provide services at little or no cost, as do other specialist Federal Officers.

7.5 However, such people do not seem to be available, and it is apparent that a truly professional approach would be a very costly exercise.

7.6 In the meantime, our "interim" co-ordinator has started at the grass roots level, by publishing a regular column in Amateur Radio magazine, thus informing and guiding individual members. An informed membership is perhaps our best "PR package", and a good starting point.

7.7 It is also pleasing to note the popularity of the video tape co-ordinator's services, and it is interesting that the ARRL has requested copies of some of our locally produced material. Good work John Ingham!

7.8 Most of our tape library contains material which is amateur-oriented, although a tape made for a pre WARC79 CCIR Meeting — "The National Resource of Every Nation", is ideal for general public viewing.

7.9 During the year, Federal MPs were forwarded copies of Amateur Radio magazine.

7.10 The Institute has been invited to be represented on a National Co-ordinating Committee for WCY83.

7.11 All of these activities are over and above "PR-type functions", which occur on a day to day basis in the form of requests for information, handouts of back copies of AR, etc.

#### 8 IARU — INTERNATIONAL AFFAIRS

8.1 Dr David Wardlaw, VK3ADW, and Michael Owen, VK3KI, continued with their responsibilities in this area during the year.

8.2 On the conclusion of the Third Party Traffic Agreement with the USA (9th July, 1982), messages of greetings between the WIA Federal President and the President of the

ARRL were passed via VK3ADW and W1AW.

- 8.3 Other matters involving IARU during the year included:  
IARU Resolution 170 — restructuring.  
New President elected — Richard Baldwin, W1RU.

Region 111 Constitution.

Gentlemen's Agreements.

Resolution 640 — Emergency Traffic.

- 8.4 As well as their IARU responsibilities, both David and Michael continued to assist the Executive greatly in CCIR work (David), and legal advice and official submissions to Government Departments (Michael). We owe a continuing debt of gratitude to both.

#### 9 SPECIALIST COMMITTEES

- 9.1 Details of individual committee activities will be found in their Reports, however it is worth noting here a few significant achievements.

- 9.2 In the Education area, greater liaison has been maintained with DDC. A grant of \$500 was obtained from the Victorian Government (with the help of the VK3 Division), for use in the preparation of an Instructor's Guide. Thank you Brenda, VK3KT, and helpers.

- 9.3 Major advances have taken place with EMC work. As reported, we now have representation on the Standards Association of Australia Committee, dealing with EMC related subjects. This is a very significant development, and we wish to thank Alan Foxcroft, VK3AE for his interest and dedication. Thanks also go to Dick Huey, VK2AHU, for his interest and help in this matter.

- Cable TV appeared to be well on the way for Australia during 1982. Our EMC Co-ordinator, Tony, VK300, and his team kept Executive well informed of likely developments in this and other important related subjects.

- 9.4 Federal WICEN Co-ordinator, Ron, VK1RH, has continued his high standard in overseeing this activity.

A quote from Ron's Report written early 1983, is worth repeating here:

"regrettably complacency has set in in some places and despite liaison by co-ordinators, the disaster control agencies are not always convinced that on the day their available communications will be taxed and inadequate. Sadly it frequently takes a tragedy to re-inforce this viewpoint."

Ash Wednesday, a few days later, echoed this view very loudly in both South Australia and Victoria.

- 9.5 In the Intruder Watch field, Bill, VK2EBM, is succeeding in reviving interest in a very difficult area. Bill took over from Bob VK4LG, whom we thank for his efforts. Intruder Watch rarely has rapid, spectacular results — but it is an essential "insurance policy" for amateur radio.

- 9.6 Neil, VK6NE, resigned as Australian Manager of the VK/ZL Contest. We thank Neil for his efforts over the past twelve years or so. A replacement for Neil has not yet been forthcoming. Any takers?

- 9.7 Chas, VK3ACR, has continued the good example set by Bob, VK3ZBB, in the AMSAT-AUSTRALIA co-ordinator role —

an essential activity if Australian amateurs are to be kept up-to-date with developments.

- 9.8 During the year a liaison team was established in Canberra, so that if need be, Executive could, on short notice, have suitable representation for urgent discussion with Government Departments located there. The services of Jim Lloyd, VK1JL (previous Executive member), and Ron Henderson, VK1RH, (previous VK1 Federal Councillor and currently Federal WICEN Co-ordinator), were obtained. I am sure that such a facility will prove to be of great benefit to the Institute.

- 9.9 The activities of the Publications Committee, Federal Technical Advisory Committee, the Federal Contest Manager and Federal Awards Manager are obvious and well known to all active amateurs, and need no further elaboration here. To all concerned and other helpers — thank you.

#### 10 EXECUTIVE

- 10.1 The Executive for 1981/82 was elected as follows:

Peter Wolfenden, VK3KAU, Federal President, Chairman  
Bruce Bathols, VK3UV, Executive Vice-Chairman, Editor AR  
Courtney Scott, VK3BNG, Hon Treasurer and Chairman Finance Sub-Committee  
Harold Hepburn, VK3AFQ  
Ken Seddon, VK3ACS  
Earl Russell, VK3BER

Because of business commitments, Mr Hepburn had to resign as a member of the Executive during the year.

- 10.2 Whilst not members of executive, David Wardlaw, VK3ADW, Michael Owen, VK3KI, Bill Rice, VK3ABF, Jack O'Shannassy, VK3SP, and Mike Thorn, VK3BKK, attended Executive Meetings and were of great assistance during the year.

- 10.3 A number of others also attended Executive Meetings during the year and details are shown in Appendix 2.

- 10.4 Many other people assist in the operation of the Institute; many in specialist capacities sharing the considerable workload with the Executive.

IARU and Region 3 Liaison Officers — Mr M Owen, VK3KI; Dr D Wardlaw, VK3ADW  
AMSAT Australia — Mr C Robinson, VK3ACR

Federal Intruder Watch Co-ordinator — Mr W Martin, VK2EBM

Federal Technical Advisory Committee — Mr W Rice, VK3ABP

Federal Education Co-ordinator — Mrs B Edmonds, VK3KT

Federal Historical Officer — Mr G M Hull, VK3ZS

Federal Contest Manager — Mr R Dwyer, VK1BR

VK/ZL Contest Manager — Mr N Penfold, VK6NE

Federal QSL Manager — Mr N Penfold, VK6NE

Federal Awards Manager — Mr M Bazley, VK6HD

Federal EMC Co-ordinator — Mr A Tregale, VK300

Federal WICEN Co-ordinator — Mr R Henderson, VK1RH

Federal Video Tape Co-ordinator — Mr J Ingham, VK5KG

Chairman Federal Finance Sub-Committee — Mr C Scott, VK3BNG

Chairman Publications Committee — Mr B Bathols, VK3UV

- 10.5 There are, of course, many others not listed here who serve the Institute as individuals or as members of the various specialist Committees. On behalf of WIA Members and the Executive, I thank them all.

#### 11 OFFICE AND STAFF

- 11.1 The workload on the office continues to grow with increased Membership and responsibilities.

- 11.2 It is essential that we maintain an efficient central nucleus for the operation of our dispersed Institute which relies so heavily on volunteers spread right across Australia.

- 11.3 Because of membership growth and because individuals are less prepared to volunteer their time these days more and more work is having to be done by paid staff.

- 11.4 During the year, Peter Dodd, VK3CIF, retired after more than ten years service.

Peter served the Institute well during those years, and has seen both it and amateur radio in Australia through their greatest growth periods.

A retirement dinner, attended by over fifty people, was held in Peter's honour.

Mr Reg Macey took over as Secretary/Manager from 28th August, 1982.

- 11.5 I would like to personally thank our hard-working employees and also those contractors who have contributed to the operation of the Institute during the year.

- 11.6 Present staff are:  
Mr R J Macey Secretary/Manager  
Mr C W Perry Membership Records/EDP  
Mrs A McCurdy\* Secretarial and general duties

Mr J Hill\* AR Advertising/interim

PR Co-ordinator

\* part time

- 11.7 As this is my final Report as Federal President, I would like to thank all officers of the Institute for their assistance so readily given during my years as President; but help and guidance frequently came from other sources, both amateurs and others outside the amateur ranks.

To all — thank you again.

FEDERAL PRESIDENT (1982)

(signed) P A Wolfenden

Continued page 28

**\*\*HELP\*\***

**INTRUDER WATCH**



**Please help INTRUDER WATCH by reporting all intruders.**

# APPENDIX 1

Membership statistics. All statistics are to 31st December, 1982 (previous years in brackets). DOC Statistics (as supplied to WIA) refer to licences issued, whereas WIA statistics refer to individual amateurs.

TABLE 1

	Total Licences DOC	WIA Licences	% members to total Licences	Other WIA members	Total WIA members
VK1	324 (352)	209 (178)	64%	25 (40)	244 (218)
VK2	4478 (4289)	2065 (1988)	46%	175 (210)	2240 (2198)
VK3	4138 (4582)	2063 (1911)	50%	263 (252)	2346 (2223)
VK4	2303 (2137)	1307 (1150)	56%	106 (102)	1435 (1252)
VK5	1769 (1732)	1052 (1002)	59%	135 (134)	1167 (1136)
VK6	1226 (1182)	729 (652)	59%	66 (76)	795 (728)
VK7	478 (465)	298 (278)	62%	25 (41)	323 (319)
TOTALS:	14716 (14750)	7743 (7219)	53% (49%)	817 (855)	8570 (8074)

TABLE 2  
Number of Clubs included in above were 101 (106)

VK1 — 2; VK2 — 27; VK3 — 28; VK4 — 27; VK5 — 10; VK6 — 7; VK7

TABLE 3  
Number of WIA members shown as holding two Callsigns — 100 (210):

VK1 — 2; VK2 — 34; VK3 — 34; VK4 — 10; VK5 — 6; VK6 — 13; VK7 — 1

TABLE 4  
Percentage increases/decreases 31-12-81 to 31-12-81:

	DOC Licences %	WIA Licences %	Total WIA members %
VK1	- 9	+15	+11
VK2	+ 4	+ 4	+ 2
VK3	-11	+ 4	+ 5
VK4	+ 7	+13	+13
VK5	+ 3	+ 5	+ 4
VK6	+ 4	+11	+ 8
VK7	+ 3	+ 7	+ 1
TOTALS:	0	+ 7	+ 6

TABLE 5  
DOC Licences by Grade — 31-12-81 to 31-12-82:

	Full	Limited	Novice	Combined	Totals	%
VK1	172 (201)	64 (73)	88 (69)	20 (19)	324 (352)	- 9
VK2	2411 (2296)	794 (808)	1036 (1030)	237 (155)	4478 (4289)	+ 4
VK3	2098 (2079)	930 (1257)	879 (969)	231 (161)	4138 (4532)	-11
VK4	1165 (1098)	319 (301)	181 (149)	223 (213)	1789 (1732)	+ 7
VK5	996 (927)	276 (278)	397 (435)	120 (94)	1769 (1732)	+ 4
VK6	751 (674)	178 (196)	229 (265)	58 (47)	1226 (1182)	+ 3
VK7	272 (258)	99 (99)	78 (83)	29 (26)	478 (466)	+ 3
TOTALS:	7865 (7533)	2660 (3010)	3305 (3566)	886 (641)	14716 (14750)	0

TABLE 6  
WIA Members by Grade:

	F/c	A/T	S	G	L	X	Clubs	Total
VK1	196	26	7	3	3	8	2	244
VK2	1774	150	31	225	9	24	27	2240
VK3	1709	224	56	111	7	64	28	2346
VK4	1140	85	3	111	7	62	27	1435
VK5	911	114	20	106	7	19	10	1167
VK6	645	55	15	45	6	22	7	795
VK7	263	21	4	25	4	6	-	323
TOTALS:	6738	675	136	741	55	225	101	8571



## PUBLIC RELATIONS

John J A Hill VK3WZ

Well, with half the year of 1983 behind us, we'd better get some real action during the second half and I am pleased to see that divisions and clubs are getting their act together for some promotion or another during this period.

Here are some details.

The "Eastern and Mountain District Radio Club" is holding a special event on 3rd September, called "Communication EXPO '83" in the form of a Hamfest and display of communication equipment at the Nunawading Civic Centre, Whitehorse Road, Nunawading.

There will be a working station using the callign VK3WCY specially allocated for the occasion. This callign will be activated on all bands with EMDC members on a roster system during the four weeks leading up to the EXPO on 3rd September.

The Victorian Division of the WIA has decided to declare the week from 28th August to 4th September — "WCY '83 Activity Week".

The VK3 President and PR Officer Jim Linton, VK3PC said that all zones and affiliated clubs had been asked to consider their own WCY activity during this period. He would assist zones and clubs with advice and hopes that individuals in the organisations would co-ordinate their activities.

I would like to make a few suggestions which could assist to make these operations a success: How about ALL divisions and clubs join the fun during that week.

Let us demonstrate at schools and shopping centres, (not with placards, songs or slogans), but with our HF equipment, and also RTTY, VHF and UHF equipment.

I would have liked to pass on some information from the Australian WCY Bulletin, but since the April issue arrived at this desk three days ago, some interesting items are too late for the AR July issue.

However here are some items:

- Aussat Pty Ltd has contracted to buy twenty one earth stations with 2.4 to 2.5 metre dish antennas to carry out technical trials for the telecommunications role of Australia's satellites. The earth stations will also be demonstrated on-site to potential users who will need modern two way voice and data links. These include mining companies, police and education authorities.
- 11-12 July — Organisational Communication Seminar, organised by Warrnambool Institute of Advanced Education. Venue: Windsor Hotel, Melbourne.
- 13-15 July — Communications and Government Seminar, Canberra College of Advanced Education.
- Register your activity for WCY.

Private or public sector organisations planning an event to mark WCY or wishing to associate an event with WCY can apply to list it as an official WCY activity by contacting Mr Allan Guster, The National Correspondent, WCY Department of Communications, PO Box 34, Belconnen ACT 2616.

73, John AR

# APPENDIX 2

Attendance at Executive Meetings from 22nd April, 1982 to 14th April, 1983 inclusive.

	Attended	Maximum
Mr B Bathols	17	18
Mr P Wollenden	17	18
Mr H Hepburn	9	18
Mr C Scott	16	18
Mr K Seddon	16	18
Mr E Russell	15	18

Also attended: Mr R J Macey 11, Mr P B Dodd 7, Dr D Wardlaw 15, Mr W Rice 13, Mr J O'Shannassy 12, Mr W Roper 9, Mr J Hill 5, Mr M Thorne 3, Mr J Linton 1, Mr R Fisher 1, Mrs B Edmonds 1, Mr M Owen 1, Mr K McLachlan 1.

Four Special Meetings were held during the year.

If members require any further details on particular points it is suggested that they contact their Federal Councillor for clarification.

AR

## EMC (Electro Magnetic Compatibility)



If radio frequency interference is causing you a problem you are reminded that — "Advice on all types and aspects of interference (PLI, TVI, AFI, etc.) is available from the National EMC Advisory Service".

FORWARD DETAILS TO  
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Federal EMC Coordinator, QTHR.

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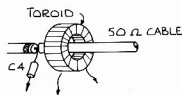
# NOVICE NOTES

Ron Cook VK3AFW

7 Dallas Avenue, Oakleigh, Vic 3166

This month we will discuss some questions put to me by readers. They all relate to ATUs and the recent article in this column on a junk box ATU.

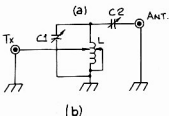
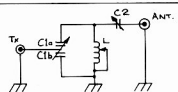
Firstly the errors and corrections. In Fig. 1 capacitor C4 is the unlabelled capacitor near R1. It has a value of 10 pF. Next C2 should be marked as C3 and C3 should be marked as C2. Please make these corrections to your copy.



**Figure 1 — Improved Arrangement for T1 in VSWR Meter of Junk Box ATU.**

The left and right ends of the two separated coax braids are grounded. Another simple but effective construction method is given by Drew VK3XU in March AR page 21.

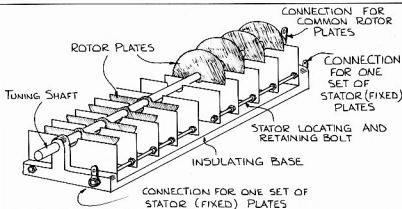
An improved method of constructing T1 is shown here in Fig 1. The braid is extended through the toroid's core so as to form a Faraday screen. This is an electrostatic screen that prevents stray capacitive coupling occurring between the cable core and the winding on the toroid. Note that this is the method used by Drew Diamond in his excellent article in AR April 1983. (A sensitive SWR meter).



**Figure 2 — Ultimate Transmatch.**

a. Actual circuit.  
b. Equivalent circuit without a differential capacitor.

Referring to Novice Notes for February 1983, the question has been asked as to why a differential capacitor is used in the Universal Transmatch. As stated in the text at the time the purpose of C1 (which has two halves A and B) is to provide a means of tapping the transceiver up the tuned circuit. Fig 2 shows the circuit of the ultimate transmatch and a circuit which is equivalent. Note that one extra control is required for a practical version of the equivalent circuit hence the advantage of the differential capacitor. Note that the common rotor is *not* earthed and the electrically insulated stators (the fixed plates) are connected to each end of the coil. It should also be noted that inductors with two roller contacts capable of independent adjustment would be a little difficult to make! (Think about that one.) For those of you who would like a differential capacitor but can't find one to buy then study Fig 3. I hope that gives an adequate instruction on one possible method of construction.



**Figure 3 — Construction of a Differential Capacitor.**

One form of construction is illustrated here. Two single gang capacitors may be joined to make a differential capacitor. Note that one set of rotor plates are turned 180 degrees with respect to the first set. A practical capacitor would have more plates and be more elegant in construction than the illustration.

Another question concerns the low and high pass characteristics of ATUs. "Will an ATU stop BCI?" I have been asked. The answer is probably not. Any BCI caused by a modern rig is likely to be due to overload caused by the strong signal in the vicinity of your station and not by harmonics. If an ATU has inductance in series with the hot wire and at least one capacitor to ground then that circuit will attenuate harmonics of the signal for which the unit is tuned. If it has an inductor to ground and a capacitor in series with the hot wire then there will not be much attenuation of harmonics. Both PI and L networks

give good attenuation of harmonics. In some instances where TVI occurs, particularly with the old style AM/CW rigs, a low pass circuit is of benefit. See Figs 4, 5.

No matter what kind of ATU you use you will, from time to time, find an antenna that won't tune satisfactorily on one band. Back in the old days (before 1965) when AM rigs with PI couplers were common, the problem of not being able to load up on one band frequently occurred. It was solved, in most cases, by increasing the length of the transmission line. The same solution will be found to be just as successful with the ATU problem. We all know that a quarter wavelength line can be used to transform a small resistance to a large one. We also know that a half wavelength will not change the impedance if connected between a load and a transceiver. See Figs 6, 7. But what happens for other cable lengths? By using a calculator programme supplied by Evan, VK3ANI, I have been able to calculate the changes of impedance for a 50 ohm line

with a 2:1 VSWR. The results are shown in Table 1. I have assumed a 100 ohm load. The line length is given in electrical degrees. 360 degrees equals one wavelength, 180 degrees equals half a wavelength, ninety degrees equals a quarter wavelength etc. The results are given for five degree increments up to thirty degrees and then in thirty degree increments. Negative values of reactance are capacitive reactance and positive values are inductive. The table is done this way to make it independent of frequency.

The mathematically inclined should study Fig 8 as the values in Table 1 are for series



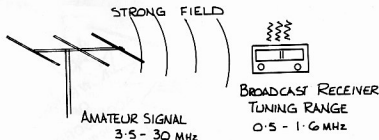


Figure 4 — BCI

BCI is most frequently caused by the strong RF field in the vicinity of a transmitters aerial. Rectification of this signal by audio stages is a common phenomenon. Low pass filters do not help here.

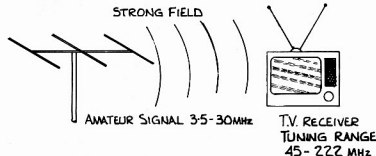


Figure 5 — TVI

Although TVI may be caused by susceptibility to strong fields, harmonics from a transmitter can often cause TVI. A low pass filter installed at the transmitter will help eliminate such TVI.

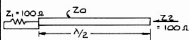


Figure 6 — Quarter Wavelength Line.

A quarter wavelength of 72 ohm cable transforms a 100 ohm resistance to a 52 ohm resistance. Resistances greater than 100 ohms are transformed to values less than 52 ohms.

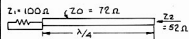


Figure 7 — Half Wavelength Line.

A half wavelength of transmission line of any impedance transfers the same value of impedance at the input to the output.

components. That is for a 100 ohm load or termination connected to a thirty degree long line the impedance seen at the other end of the line is a resistor of 57.1 ohms in series with a capacitor of 37.1 ohms reactance.

Inspection of Table 1 should reveal a periodic (repetitive) variation of impedance because as the line length is increased. In this example the resistance varies between 100

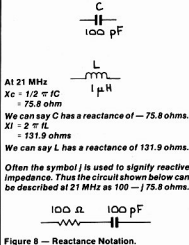


Figure 8 — Reactance Notation.

and twenty five ohms every ninety degrees. The reactance varies from zero through a maximum capacitive reactance of about forty ohms and back to zero for the first ninety degrees. As the line length is increased further the reactive portion again increases to

about forty ohms and back to zero but this time it is inductive. The cycle is repeated every 180 degrees.

This is a result we might have anticipated as we know that adding a half-wavelength line does not change impedances. This also allows us to remove all the exact half-wavelengths (on paper or in our imagination of course) to see what fraction remains. The transformation caused by that fraction is the transformation of the whole line.

For example a line 390 degrees long is equivalent to one only thirty degrees long as far as impedance transformation is concerned. The more knowledgeable reader will be saying that line loss has an effect too. So it does but on HF the effect is reasonably small and will not affect our general conclusions and comments.

So where have we got to? Well if our ATU has problems in tuning a particular load because the load is too high or too low we can now see a solution. That is by adding up to a quarter-wavelength of feeder a more manageable load will be presented to the ATU. In some cases up to a half-wavelength may be required.

One further point to note is that if the VSWR on the line is greater than 2:1 then the range of impedances will be greater than shown in Table 1.

At a later date I will discuss VSWR in more detail and bury a few sacred cows in the process.

73 DE VK3AFW

AR

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AM...a) 26-180 MHz 1.0V S/N 12 dB  
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Slow.....4 Channels/sec.
- Seek Rate: Fast.....10 Channels/sec.  
Slow.....5 Channels/sec.
- Scan Delay: 0, 3 or 4 seconds
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Whip or External Antenna with  
LO/DX Control (20 dB ATT.)
- Freq. Stability: 26-180 MHz ... Within 300 Hz  
380-514 MHz ... Within 1 KHz

The JIL SX-200 represents the latest **STATE-OF-THE-ART** technology in the development of Scanning Monitor Receivers. It has many features that previous have not been available on receivers of its type.

For example the tremendous frequency coverage, which encompasses all of the following bands:— HF & UHF CB, 27 & 155MHz MARINE, Australian LOW BAND, AIRCRAFT band, VHF SATELLITE band, 10Mx, 6Mx, 2Mx and 70CMx AMATEUR, VHF HIGH BAND and UHF TWO-WAY band — as well as many others. Other features include detection of AM or FM on all bands. Squelch Circuitry that can be used to LOCK OUT carrier only signals. Fine Tuning control for off channel stations. 240 VAC plus 12VDC operation, Squelch Operated Output that may be used to trigger a tape recorder or channel occupancy counter and accurate Quartz Clock.



**\$599**

plus \$10  
P & P

### ACCESSORIES

Service Manual \$12 + \$2 P & P  
Scan-X Base Antenna \$62 + \$10 P & P

# JIL SX-200

## A BETTER SCANNING MONITOR RECEIVER

### HIGH QUALITY AND PERFORMANCE

JIL have designed the SX-200 as a high quality, high performance programmable scanning receiver at a realistic price, design criteria which are not born in many other receivers of its type.

### MECHANICALLY RUGGED

The JIL SX-200 is ruggedly built using EPOXY-GLASS printed circuit board and double sided through hole plating techniques. Easy access and servicability is maintained throughout its design.

### 4 BIT MICROPROCESSOR WITH ONBOARD ROM AND RAM

A powerful 4 Bit PMOS Microprocessor, the  $\mu$ PD553, is used as a controller in the SX-200. Its features include 2000 x 8 ROM and 96 x 4 RAM onboard as well as up to 80 instructions with a 3 level subroutine stack.

### EXTREMELY LOW SPURIOUS COUNT

Even though the SX-200 covers over 33,000 Channels JIL, through careful design, have been able to reduce the number of internally generated spurious signals to an extremely low level. Not the case in most other scanning receivers.

Monitor thousands of frequencies including many Military & Civil

**HF-VHF-UHF**



### FULLY TRACKED RF AMPLIFIERS

The SX-200 makes use of 3 separate RF Amplifier Stages. They are divided into 6 bands, each band having its own electronically switched coils which are fully tracked with the receiver frequency using Varicap Diodes. Maximum performance is thus gained over the entire operating range of the set.

### NEW ACCESSORIES

#### ■ EXP-32 KIT

Increase the memories of your SX-200 to 32 with this memory expander kit.  
\$53 + \$2 P & P

#### ■ A4-AM KIT

Provides automatic AM operation on the 27 MHz CB MARINE and AIRCRAFT bands.  
\$32 + \$2 P & P

#### ■ CVR-1B CONVERTER

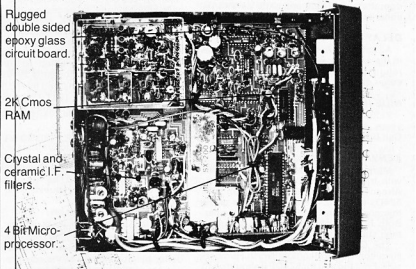
allows your SX-200 to cover 180 to 380 MHz (Incl. SPACE SHUTTLE frequencies).  
\$199 + \$5 P & P

#### ■ CVR-2 CONVERTER

allows your SX-200 to cover the SHORT WAVE bands, 0.55 to 30 MHz.  
\$189 + \$5 P & P

#### ■ MFJ-332 VLF CONVERTER

allows your SX-200 to cover 5 KHz to 1600 HKZ  
\$144 + \$5 P & P



**SX-200, RUGGED CONSTRUCTION AND EASY SERVICABILITY.**

### AVAILABLE FROM

W.A.: Letco Trading Co. (09) 387 4966, N.S.W.: Emtronics (02) 211 0531, QLD: CW Electronics (07) 397 0808, S.A.: Jensen Intersound (08) 269 4744. Plus many other regional outlets, contact GFS for your nearest stockist.

AUSTRALIAN AGENT & DISTRIBUTOR

**GFS ELECTRONIC IMPORTS**

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PO Box 97, Mitcham, Vic. 3132

Telex: AA 38053 GFS

Phone: (03) 873 3939, 873 2652



# HOW'S DX

Ken McLachlan VK3AH  
PO Box 39, Mooroolbark, Vic 3138

"DXing ain't what it used to be!" is the cry heard from many of the Old Timers as I read the mail across the 20 metre band when signals can be heard, which isn't very often.

The downward trend of the solar cycle is really beginning to show as propagation is becoming very unpredictable and the chance of reliability in regular scheds is fast diminishing. These are not enhanced with the abundance of solar flares heard of late. Ten metres, except for short path Africa, at odd times is a non event, 15 has been left to our northern neighbours and 20 is filled with barely audible harmonics from my word processor.

The 17th of May, International Telecommunications Day, was somewhat different and your scribe had the privilege of being an operator using the callsign AX3ITU for part of the twenty four hour period that its use was allowed.

A start was made at 0000 UTC by joining the long established VK3UE Net, on 14.150 MHz, for a few friendly exchanges of reports with Clarice and her long standing friends. Then a quick tune over the band, interspersed with a few CQs, brought no bites. A scan of 15 metres didn't look too encouraging so 10 metres was to be it if there was any activity.

A half hearted CQ on a desolate band brought an abundance of replies, the dogpile had started and lasted for nearly an hour until it came to an abrupt end. Next stop, 15 metres and this proved to be very lucrative with some very strong signals but the majority suffered from very deep troughs of QSB which, at times, made the exchange of reports a little more difficult. This band collapsed or the demand for the special prefix and suffix dried up some three hours later.

This break was utilised to work some local stations that wanted the callsign on other bands then it was back to 15 for a couple of hours with the North Americans for company until 20 opened up to Europe on the long path. The QRM was unreal on this band because of the undisciplined operating techniques used in some European countries and the QSO rate per hour dropped sharply until the end of my stint at 0800 UTC when Bill VK3DDE and Des VK3DES ably carried on working 20 and 80 metres respectively.

Bill mowed through the demand from North America whilst Des kept the Novices happy on 80 metres, relieving Bill about 1400 UTC and going right through the night. Apparently the band collapsed around 2130 UTC and only a handful of contacts were made until ITU day came to an end.

Unfortunately very few JAs were heard and worked as these meticulously adept operators, who enjoy collecting special

event station's cards, did not have a chance, due to conditions that prevailed on the day, to compete in the pasteboard derby. If the band had been open to the north as well the log would have looked a lot healthier in the contacts per hour department.

It was nice to hear Socorra PY1EMF/PY0T at 5 x 9 plus calling CQ, only to be gobbled up by a thousand JAs and then disappear into a quiet band within ninety seconds also to hear A71BJ appear and be 40 dB over the North Americans on 15 metres. Other highlights of my period of operating included working two American QRP stations from the "pile up" that were running two watts into the antenna, a solar powered station running ten watts, a number of mobiles in Europe and one YL on all bands.

I am glad to have had the opportunity to use the once off special call that is worth a "kilowatt" of power and get a little more operating in on the DX bands than the normal. In all 819 stations were worked on 80 through to 10 metres by the three operators and QSLs are 100% via VK3AH either with a SASE or via the Bureau.

## DELAY

All cards for Peter VK0ST at Casey base in the Antarctic will be answered when he returns in early 1984. QSL to VK6AST either direct or via the Bureau.

## NIUE ISLAND

ZL2IK will be on Niue Island for two years. All QSLs to ZL2LF as per the 1983 Call Book or via the Bureau.

## KENYA RTTY ACTIVITY

More activity is promised from this area with the licensing of two new operators. Already there and QRV on all bands is 5Z4DJ whilst 5Z4DP is expected to arrive this month and his equipment in September. Both hope to obtain 5H licences during their stay.

The QSL information for 5Z4DJ is 39 Hamilton Rd, Bridlington, North Humber-side, England and for 5Z4DP it should go to 18 Malham Ave, Anlaby Rd, Hull, North Humber-side, England.

## NETS

With propagation on the downward trend the only way to increase your country tally may be to become a Net chaser or eavesdropper. Dieter, OE2DYL has made this a little easier for everybody by compiling a list of known nets, their operating frequencies and times.

His publication "DX Nets Around the World" may be obtained by sending six IRCs or equivalent currency value and a self addressed envelope to him at

Bessarabierstrasse 39, A-5020 Salzburg, Austria.

## SP

A recent QSO with a Polish friend suggested that the reissuing of licences is a very slow process and at the end of May only some 500 licences have been reissued. Apparently dipoles and 100 watts seem to be the order of the day.

## CLIPPERTON

Rumours have it that Clipperton will be activated late 1983 or early 1984. This expedition is being organised by the Club d'Océanie Radio et Astronomie who had hoped to get away earlier this year but due to various problems was postponed. The operators are supposed to consist of eight F0Bs, six operators from North America and two from Japan.

## HC1JB

If you worked this station around the middle of June, and the callsign rings a "bell" of yesteryear, you were right. The callsign originally belonged to the late Clarence J Moore W9LZX, an engineer at the commercial broadcast station HCJB located in Quito, Ecuador. He was commonly known as the "Voice of the Andes". This gentleman is attributed to having invented the "Quad" in the early 1940s.

This activity was sponsored by HCJB as a contribution to WCY 1983. QSLs direct only to HC1JB, Casilla 691, Quito, Ecuador.

## CLARIFICATION

Please advise all DX friends that the QSL Manager for Chris ZL4OY/C is VK3DWJ-QTH W Johnson, Post Office, Skipton 3361 and NOT VK3DWG who has had his extra share of mail with QSL requests.

## IRCS AGAIN

With the prohibitive price of IRCS, the alternatives, if one wants the card direct, is either by "Green stamps" or American dollar bills or stamps of the country that you are requesting the card from.

At the time of writing, mid May, the exchange rate allows one "greenie" for ninety cents and these are obtainable over the counter from major banks in this country.

Another method is a service which is being run by the DX Stamp Service which allows you to send a card to the DX station with a self addressed stamped envelope with stamps of his own country, an incentive to return a card.

Further details of this service can be found by an SASE or equivalent postage to George Robertson W2AZX, 7661 Roder Parkway, Ontario NY 14519.

## MARKET REEF

Market Reef QJ0 is expected to be QRV from July 22 to August 1 and operators will include OH0s NA, NC, RJ, G4JVG and PA0GAM.

## TRISTAN da CUNHA

Mike ZD9BX will be QRV from this area until at least September and will be active on the bands as time from his duties as chaplain permit.

## DUPLICATES

John Attaway's comment in March 1983 CQ of "Hey, the DX stations don't like duplicates either" was a comment on contests but it aptly applies to DXpeditions.

In this column last month mention was made of the statistics that Hugh VK6FS had extracted from the VK0HI and OCW logs. This month Hugh has forwarded a considerable amount of impeccably laid out figures that have taken considerable hours of enthusiasm and dedication to produce. These will be summarised due to their complexity.

An overall estimated duplicate percentage on all contacts came out at 21.5% made up of VK0HI/SSB — 16.9%, VK0CW/SSB — 8.4% and VK0CW/CW — 26.26%. The areas that took the cake for duplicates on figures for VK0CW on 14 MHz was W/E at 28.4%, Europe 26.8% and JA at 25%. VK0HI operating SSB was not as unlucky and had only a maximum 22.8% which occurred from South American operators closely followed by JA and VK operators.

Not many operators succeeded in coming near the record of duplicates set by one VK3 who contacted VK0HI seven times for a report on 14 MHz. Many Europeans, Ws and JAs appeared four, five and six times.

Hugh's comments in a covering note probably should be printed, though my remarks of last month, "No further comment is necessary" still stands.

## FCC PROPOSALS

The North American operators have spread their wings in the 20 metre band now the FCC is considering proposals for phone band extensions in other bands such as:

BAND	PRESENT ALLOCATION MHz	PROPOSED ALLOCATION MHz
80 metres		
Extra	3.775-4.000	3.750-4.000
Advanced	3.850-4.000	3.775-4.000
General	3.890-3.850	3.850-4.000
15 metres		
Extra	21.250-21.450	21.200-21.450
Advanced	21.270-21.450	21.225-21.450
General	21.350-21.450	21.300-21.450

10 metres

The proposal is to extend the present band for all HF licences from 28.500 MHz to 28.300 MHz — 29.700 MHz.

## 3X YL?

Al WB8ZJW and his XYL both have positions in the Republic of Guinea and on moving there in the near future hope to

obtain licences. Dieter DL5DAB who has been active using DL5DAB/3X has returned home but hopes to return later in the year and be issued with a 3X suffix.

## QATAR

Dave G4BXH has been posted to Qatar. Many VKs will remember him as VP8HJ and G4BXH/VE4 however there is little likelihood of anyone hearing him on the amateur bands from this locale. He has been refused a licence in A71 land. Dave believes that no more licences will be issued.

Dave is amazed that both A71AD and A71BJ, who run at least a kilowatt input, do not seem to have a TVI problem particularly as most of the sets in that country have wide band preamplifiers and log-periodic antennas with up to 26 dB gain so that they may be able to copy transmissions from Kuwait and Oman.

## SYRIA

It is apparent that there are now two active amateurs in this country now. Rasheed YK1AA and Michel YK1AN have an excellent QSL route through Franz DJ9ZB.

## WHAT IS THE CW NET?

The frequency of 7.025 MHz is the meeting place, each Sunday morning, of a friendly CW operators get-together. Time unknown. Apparently the object of the "get together" is to pair operators off to different frequencies for a friendly QSO. Can any reader please supply me with more details for inclusion in this column?

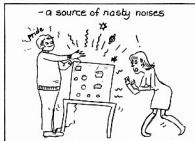
## WELCOME

Well known QSL Manager Mary Ann Crider W3HUP has joined the WIA through the VK3 Division. Welcome Mary Ann on behalf of all VK DXers and it will be nice to see your call amongst the WIA DXCC list in the near future.

It is thought that Mary Ann is the first overseas member to join the Institute and was closely followed by Ken G3NBC. It will be interesting to see how busy Mike VK6HD, the WIA Awards Manager, is going to be if this trend continues.

## DXING YL STYLE

In this column in May mention was made of Diana G4EZI having in excess of two hundred YL countries confirmed. A request was made to Diana if she would divulge her secrets. This she has done and if you too want to work an abundance of YLs in other countries then read on...



## "FIND THE LADY" or HOW YOU, TOO, CAN GET YLXCC

Once upon a time, I was a "normal" type of radio-hating XYL. The receiver my OM Richard had, was just a source of nasty noises to me. But when he got his callsign G4DZI and actually started transmitting, I realised what fun it could be, and, like many other XYLs before and since decided I'd like to join in too.

Interest in chasing YLs could be said to have started in even those early days as I poured over my books in preparation for the RAE exam. If Richard was tuning round and I was busy elsewhere and a YL voice was heard, I'd dash in shrieking,



"There's a LADY amateur! Call her — and find out how she did it!", and my poor OM would have to stop his happy tuning and call the lady concerned, and ask how she'd managed to pass the dreaded exam.

With my own callsign finally obtained, I could do my own YL chasing. Richard and I were both collecting countries, in friendly competition with other recently licensed local amateurs. Not very seriously as we only had a vertical antenna and low power in those days. But the idea of collecting YL countries slowly crystallised after a conversation with Mike G3VUH whom I met one day on 80 m and who turned out to have worked all sorts of fascinatingly exotic YLs. He sent me a list of them, which whetted my appetite for the chase, especially as some of them were still around! Hearing that CLARA, the Canadian Ladies Amateur Radio Association offered a certificate for doing it, was all I needed. I decided I'd "specialise" in YL country collecting, and make that my own "thing" in radio. So if you decide to do this too, here's what I had to do, just to give you an idea.

First steps included listing all those I'd already worked. Not too hard a task as my log book was mainly full of G OM's on 80 m in those days, and it was quite easy to pick out the YLs. Gratifying too, to find how many I'd already got, just in the normal course of QSOing.

Getting into the swing of things I soon developed a technique, of working any DXstation I could, and blatantly asking if they knew any licensed YLs. I must have made myself a thorough nuisance at times! If I got a positive response, it was a case of cajoling the station concerned to try and arrange a sked for me. Sometimes it worked, sometimes not. I guess some stations said yes, and agreed a time and frequency to get the YL on, just to get rid of me and work their pile up in peace! But sometimes they did know a licensed YL in their country, and did succeed in getting her on for me. These times gave me the encouragement to continue.

# G4DZI

OPERATING TIME  
G4EZE  
G4DZI  
G4EZE  
G4EZE  
G4EZE

XYL: G4EZI

BYLARA — WARU — ALARA — YLRL — CLARA — YLISB 10088

OM: G4DZI

# G4EZI

YLDXCC YLWAS



RICHARD HUGHES, 3 PRIMLEY PARK CRESCENT, LEEDS LS17 7HY, ENGLAND



DIANA HUGHES, 3 PRIMLEY PARK CRESCENT, LEEDS LS17 7HY, ENGLAND

HIS & HERS QSL cards designed by Diane.



Richard G4DZI and Diana G4EZI. On the wall are the hard won and treasured QSLs and awards of Diana's collection.



French colonies couldn't or wouldn't speak English. Still, the thrill of netting another contact overcame my embarrassment over my terrible accent.

Spanish was another "must" to work Central and South American YLs. A local amateur who spoke it fluently coached me in how to make a rubber stamp QSO and how to call CQ YL in Spanish. I was very timid about doing this — it didn't work anyway, and I found it much better just to search them out and call them. Again my accent was pretty terrible, but the novelty of finding even a slightly Spanish speaking English station strangely enough often seemed to prove quite an attraction to the South American YLs, who would often chat away to me quite happily, oblivious of the fact that I couldn't really understand a word they were saying!

It was very thrilling to hear a YL I'd maybe been looking for, for months or even years. I could feel my heart pounding with excitement and fright in case she got away after all! I barged in once to an American traffic net in hot pursuit of a Panamanian I'd heard there, shouting "Break! break!" excitedly. I got a real lecture from the net control, on

the correct use of the double break (emergencies only — "But I honestly didn't know that Sir", I pleaded — you see, we don't have third party traffic nets in this country). My face was red, but at least the YL came off frequency with me and I got my contact!

Swapping information with others on the YLDXCC trail also proved very fruitful. I used to talk from time to time with an OM from 4X who had a really fantastic YLDXCC total. I despaired of ever catching up with him! But at least it was a help in knowing who to look for.

Sometimes too, I found it a distinct advantage being a YL myself. I would sometimes ask for a YL operator on a DXpedition and get her — other enquirers, who happened to be OM's were not so lucky. I felt quite guilty about this — seemed like taking an unfair advantage!

Nowadays, with 205 YL countries worked (204 confirmed — hurry up Kirsti with VKONL!) I've slowed up a lot and really find myself waiting for DXpeditions or new licensees. Also, I cannot imagine myself ever being so "forward" on the band again,

and badgering people for contacts. I question whether some of it was worth it — hounding some poor, terrified, inactive YL onto the band, just so that I could notch up another contact. Is that really in the spirit of true amateur radio? Still, happily those instances were few. On the whole, I met some marvellous people, made some super contacts and lots of radio friends along the way. And best of all — it was fun!

Diane and Richard share the same equipment which comprises a TS 830S, FL2100 Linear that is fed into a Mosley Mustang about ten metres high. A trap dipole is used for the lower bands.

## THANKS

In compiling this column information from magazines such as RADCOM, QSL MANAGERS LIST, WORLD RADIO, HOW'S DX, DX NEWS SHEET, QRZ DX and DXPRESS were used together with reports from VKs 2SP, 3BY, UX, YJ, YL, 4FB, 6FS, NE and SWL30042. Overseas amateurs who contributed included G3NBC, G4EZI, 1BSAT, ON7WW and ZL1AMN. Thanks to one and all.

AR

# QSLs, QTHs, HEARD AND WORKED

## QTHs YOU MAY NEED

151CK Chico Kintanar, 10-12 Avenue, Cubao, Quezon City 3008.

543TMM PO Box 429, Mbeya, Tanzania.

7PB8U R Wresch, Maluti Hospital, Mapoteng, Lesotho.

A4XX PO Box 981, Muscat, Oman.

A4XCB PO Box 18530, Salalah, Oman.

A71AD PO Box 4747, Doha, Qatar.

A92Z PO Box 26855, Bahrain.

BY1PK and BY8AA, PO Box 6101, Beijing, Peoples

Republic of China.

CG1MCS Sydney ARC, PO Box 1051, Sydney, NS B1P 617, Canada.

C080C PO Box 118, Holguin, Cuba.

CX18BL PO Box 5063, Montevideo, Uruguay.

G4AVW/ST3 PO Box 2632, Khartoum.

G04PTV 13 Threshold, Jurby, Isle of Man.

GJ4ICD PO Box 100, Island of Jersey, UK.

HCL1B Casilla 691, Quito, Ecuador.

HH2RF PO Box 2411, Port au Prince, Haiti.

HZ1FM PO Box 7198, Jeddah, Saudi Arabia.

I1QCM/5N8 PO Box 418, Kano, Nigeria.

J87B5 3 Chesterfield Hill, London W1.

JX5DW Bjorn Dommersnes, N-8103, Jan Mayen, Norway.

LU4DLH PO Box 412, Gonnet Zip1897, Argentina.

OA4DW PO Box 35, Bristol, VA 24203 USA.

SV1NN PO Box 2586, Athens, Greece.

2K2BB PO Box 719, Parker, CO 80134 USA.

V5SMK PO Box 2191, Bander Seri Bangawan, Brunei.

X02JCG PO Box 212, Chicoutimi, PO 67H 5B7 Canada.

XT2BM PO Box 140, Ouagadougou.

YV6ABM PO Box 278, Puerto Ordaz, Venezuela.

## QSL MANAGERS YOU MAY NEED

1ADKM — 11MGM, 3A2EE — F9RM, 3D2CJ —

GW3J, 4K1A-10QAV, 4N1R — YU1DZ, 4T5N —

0A9J, 5N7HKR — 0E5RI, 5T5TO — F6BUM, 5X5B8 — DL2BB, 6U0WCY — D7Z7H, 6U1WCY —

D7F7H, 6Y51C — G3XTJ, 7P8CL — SM5GJ.

8P6PC — N2AWM, 9J2B0 — W60RD, A35EL —

0E2DYL, A6XJC — P0MGM, C53CJ — K8BKs,

CX5RV — G5RV, DK0GDA/ZLS — D8NOK,

DL9ZAX/TT6 — DJ5RT, ED1LT — EA1MC, FP8ZP —

F6KNO, FB8Z0 — F6GZB, G4LWN — VE7BI,

GJ4LWN — VE7BIP, GU4LWN — VE7BIP, HC8GI —

— W3HNK, HG100KZC — HABUB, HH2C0 —

W4MGX, J87LTA — K4LTA, KC60T — JA0CUV/1,

K6C5Z — JA6BSM, LA2EX/3X1 — LA2EX,

LA0FUI/OD5 — LA8UX, OF0BA — OH2BAZ,

PA8FR1/OD — PA0FRI, T30CH — W9SLT, T32AF —

— WH6AIF, T77B — WA3HUP, T77Y — 10MWI,

TT8AD — HB9PLA, TV6ICE — F2YT, VE2DVG/YK —

— EI9G, VR6TC — W6HS, YB0ADJ — KA6N,

YJ8KG — VK4IO.

CW SWLING WITH ERIC L30042

28 MHz

KA6WZ1/2U2, I55MX, JA2YDC, JH9G0B,

J01ACD, KH2BB, UA1DZ, VK6ZT, W6JW, Y57YG,

YB5AES, ZL1BVE.

21 MHz

BY1PK (08Z), DL7AA, DU6HM, F6GU0, F08EW,

FK0AD, HH2VP, HL2DAK, IS0FPH, KC8DT, KH8X,

KP4CC, KX6PO, NP4P, OE3ALW, PY2SUT, UJ8JAS,

9KN9C, 9H1B8.

14 MHz

N0Z0/0J2, EA2AFG, FB8Z0, FK8BJ, F08FW,

GU3EIG, HU2HM, HH2VP, HK1DB0, IS0AGP,

J01ABZ, KP4BN, OF0BA, ON7EX, P29VH, PY6ABZ,

SP1ALK, SV5AT, T30CH, T12DL, TV6ICE, UJ85AO,

VK9NC, VU2VYN, XE1YV, Y22TO, YB0AFA, YJ8KG,

YV5RE, ZL2BK/M/C, 3D2CJ, 457EF.

10 MHz

A35MS, DF18G, EA3ELV, EA8AFB, E15DR,

F6GFP/P, FB8Z0, F08VN, FK8DZ, G3AAE, HL1EJ,

JA1XYB, KH6CD, KP2J, KV4CI, OK1RR, PA3WBB,

T32AF, VE5XU, VK8G0, VK8BA.

7 MHz

CT2QN, DL6WD, EA3JJ, FK8CL, HA3KG, KP2J,

LZ1KSN, NL7G, OA4CYC, SP2JS, UA1DZ, UA2FU,

UB5YBS, VK9NS, N6YK/V2A, XE2MMH, YB5AES,

YC1BQ, YU2CW, YV4AU, YQ3NP, Y94VU,

3.5 MHz

F30D, HB9BCI, OK1XX, SW2GE/MM, 4K1A,

UA10ED, UA3DLN, UA4PMK, UA9MRA, Y5BIEF,

UY500, YQ3CD, YU7NUX, YU2CRU, YU2SDA.

1.8 MHz

VK2PS, VK5NM, VK5BC.

## NOTES

Wanted — more VK CW stations on 1.8 MHz

(phone seems to be fairly well served, currently).

VK4BKM, with the rather exotic-like QTH of

TIN CAN BAY is ex P29EE, and is currently active

on 14 MHz CW.

SW2GE/MM, QTH Mediterranean Sea, has

been heard on 3.525 MHz with a very good CW

signal at 2100 UTC (in May).

In mid May, Eric L30042 had heard 68

countries on 10 MHz CW.

## SSB WORKED ON THE EAST COAST

14 MHz

3D2ER, 4Z4AB, 6W8AR, 7X2FK, 9H1GY, 9H4M, 9Y4NP,

AX1WCY, AX2WCY, AX3WCY, C21BD, C53DF, CR1LN,

CR1OF, CR1TZ, CR4CH, CR9AK, DU1EH, EA1VG, EA6MO,

EA1AH, GM2BMJ, GM3WJ, G3AXA, HA2RP, HB9ARE,

HV3J, I19TH, KC6SZ, K64DX, KH6APS, KX4R, LX1BI,

OH2BH, PADGAM, SM5MD, SP63Z, T32AF, T32AT,

TOHMSI, TOBER, UK5BB, UT5OK, UV3TIE, VK6CG, YK0ST,

YK0VK, YW6CY, YV10C, YV5JR, YV6TC, XE1GPC,

XE2AQ, Y08AH, ZK1CG, ZK2RS, ZL40Y/C, ZM1BGD,

ZM1WY, ZM2WCY, ZM3WCY, ZM4WCY, ZM5WCY.

21 MHz

38BF, 457ZN, 5H3DM, 5N3RT, 6Y5IC, A4XHG,

A71AD, A92P, C21RK, DU1CK, FB8Z0, J37AH, K5UKL/M,

K0RPP, KX6PO, N4F, P29NSF, SB3H, SV2CD, T30DB,

TL8CK, UK0FAP, VE7AT, W5TGU, W6GAV/M, W9WQG,

Z21AO, Z21BP, ZM3JZ, ZK2JS, ZL40P/C, ZM1AF,

ZS3BG, ZS4CV, ZS4F, ZS5OX, ZS5YG, ZS6WB.

28 MHz

A050, C21RK, FB8ZP, KA6PS, KX6PO, N6AQL,

N7DZW, OZ1IG, R5SKS, T09NT, V56CT/W6, WL7E,

YB3DC, YU2EU, Z210, ZL1AM/O, ZL2ACS, ZS50Y.

Bill Martin, VK2EBM  
FEDERAL INTRUDER WATCH  
CO-ORDINATOR

33 Somerville Road, Hornsby Heights, NSW 2077

Is it necessary to report the activities of an intruder station on more than one occasion? The answer is a definite YES. Ideally, reporting intruder observers should keep a check on any intruders they hear, and take notice if the intruder seems to come up on a regular basis. In other words, it's a bit pointless reporting, say, a carrier heard for five or six minutes, and which may never be heard again. However, if a signal is present daily, weekly, or on any other regular basis, and it becomes apparent that the intruder station is using the amateur band(s) as a matter of course, IN DEFIANCE OF THE INTERNATIONAL TELECOMMUNICATIONS REGULATIONS, then comes the time to start sending in reports on him. Very soon, it forms a pattern as to his operating habits, and we then, by comparing reports from other areas, learn where and when he is operating. It follows then that we can

## INTRUDER WATCH



DATE	TIME UTC	FREQUENCY IN MHz 'M' or 'E'	CALLSIGN IF HEARD	MODE	RST	BEARING 'M' or 'E' DEGREES	DETAILS OF TRAFFIC AND ANY OTHER INFORMATION
1/4	0600	21.032 M	UMS	F1B	S9	310 M	RTTY — 500 Hz shift, 75 Bauds. Letter Groups.

gradually build up a case for complaint but ONLY if we have sufficient quantities of reports. So send in reports of the same intruder you hear, after you have satisfied yourself that he is working on the amateur bands habitually.

The USSR Naval station, "UMS" on 21.032 MHz is a good example. The completed Observers' Log Sheet, which can be obtained from your Divisional IW CO-ordinator, or direct from the Federal IW CO-ordinator, would look something like Figure 1.

The date and time is self-explanatory, as is the frequency column. 'M' or 'E' simply

means "measured" or "estimated". If you are unsure of radio modes of emission, contact the Federal IW CO-ordinator, who will advise you on this. Bearing is also "measured" or "estimated". Details of Traffic column contains anything you think may be helpful in tracking down the offending station. Any information to assist you in reporting intruders is available from your Divisional CO-ordinator, or from the Federal CO-ordinator. Don't forget, if you send me a C60 blank cassette tape, I will return it with all the modes described. This tape makes interesting listening. See you next month.

AR



RTTY picture courtesy Les White VK5ZM.

# HERE'S RTTY!

Bruce Hannaford VK5XI  
57 Haydown Road, Elizabeth Grove, SA 5112

## CONNECTING UP RTTY GEAR

*A beautiful jig saw puzzle picture is meaningless until the pieces have been correctly put together, likewise excellent RTTY gear is useless until correctly connected up. From letters I have received I note many people who have RTTY gear don't know how to connect it up and to help such people I will show some typical RTTY set ups. The diagrams shown are chosen as the simplest arrangements that will give good results. Other methods are of course possible and some may prefer to use them but it is necessary to start somewhere and the methods shown are a good starting point.*

### AUDIO GENERATED FSK (HF bands using a mechanical system Fig 1)

The receive audio out can be taken from any convenient point, I use an external speaker and connect to this speaker's voice coil. The audio voltage needed is only a small fraction of a volt and enough will be available at quite low speaker volume. The two different audio tones of RTTY are fed into the demodulator input and the demodulator changes these into on/off switching at its output. The transmit and receive switching is shown connecting the demod through to the loop supply. Also shown in the switching unit is a push to talk switch to control the transceiver and a local loop switch that is normally left off. This local loop switch is useful to stop the teleprinter from printing rubbish when tuning in a signal or to put in a carriage return or line feed signal from your own keyboard when the distant operator has not sent them. The switching unit has been shown as a separate unit but it is normally convenient to include it in one of the other units such as the demod.

Personally I prefer to have the mod, demod, switching and loop supply all in one metal box as this simplifies external wiring.

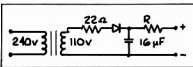


Figure 3 — Loop supply.

The loop supply is one item I have not previously dealt with so I will describe this at some length (see fig 3). The purpose of the loop supply is to provide "line" current to work a teleprinter that has been designed to work over land lines. The current needed

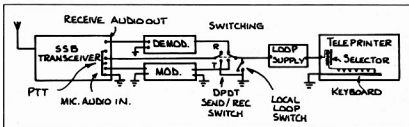


Figure 1 — Audio generated FSK (HF bands).

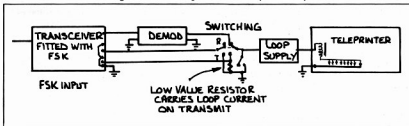


Figure 2 — DC switched FSK (HF bands).

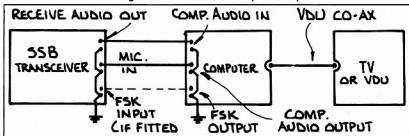


Figure 4 — Communications computer (HF bands).

depends on the machine used and in some cases how it is connected, this current is usually between 20 and 60 mA. The voltage

of the supply is not critical but is normally between about 60 to 200 volts. I would recommend about 150 volts for our type of



use. When the loop supply is providing the correct current to the teleprinter it will be found that there is only about ten or less volts drop across the machine terminals. As only say ten volts are needed to provide the correct current most people ask why is such a high voltage power supply needed? Well if only ten volts were used the circuit would be almost entirely inductive as the selector magnet coils in the machine have a great deal of inductance and in an inductive circuit the current builds up slowly so the selector armature will respond slowly to any on/off switching. The current build up is too slow for satisfactory working but by using high voltage and a high resistance current limiting resistor the circuit is no longer mainly inductive, it is now largely resistive and in such a circuit the current builds up nearly instantly. Summing this up in a few words high voltage with high resistance means a quick acting selector whereas low voltage resistance would mean a slow acting selector. Well back to the diagram and the loop current that will flow when it is switched by the output of the demod. This current is switched rapidly on and off according to the RTTY signals being received and the current flowing through the teleprinter is working the selector so as to operate the printing mechanism of the machine.

Now let's look at what happens when sending out a signal. Firstly the Tx Rx switch is put in the Tx position this switching on the transmitter and also connecting the loop supply to the modulator. Starting at the teleprinter, what is typed on the machine will cause a RTTY coded sequence of on/off switching which will mean DC pulsed loop current. This current flowing through the modulator is used to switch the modulator audio tones from one tone to the other. The modulator is an audio oscillator that only uses two fixed tones and the loop current switches these from one to the other. Normally loop current flowing means the low pitched mark tone is used and no loop current flowing means the high pitched space tone is used. The output level of the tone oscillator is too high to feed the mic circuit and will normally go via an output level control that can be set to mic level.

#### DC SWITCHED FSK (Using a mechanical system Fig 2)

You will note that most of this diagram is the same as Fig 1 and such parts may not be marked. The modulator is missing from the diagram as frequency shift modulation takes place within the transceiver. The resistor R is of a low value and its voltage drop with loop current flowing provides a small DC pulsed voltage to the FSK circuit in the transceiver.

Unfortunately not many of the cheaper transceivers are fitted with FSK but it is not a major job to install it yourself.

#### COMMUNICATIONS COMPUTER SYSTEM (HF bands Fig 4)

You will note less connecting wires are needed and the delightful simplicity of it all. The computer contains the mod and demod all in one unit so all that is needed

for audio generated FSK is to connect two audio leads between the transceiver and the computer and one RF lead to the TV used for a VDU, some units even have their own VDU built as part of the computer. If the transceiver has FSK fitted, the dotted line will be used instead of the computer out, mic in line shown.

When so used for FSK the computer has a switching circuit that is used to control low level DC pulses in the transceiver FSK circuit. Of course there are differences in various computers and a careful reading of the computer handbook is desirable before connecting up and attempting to use such a system.

#### OPERATING IN VHF/UHF BANDS

In the HF bands FSK is used and normally on VHF/UHF Audio Frequency Shift Keying (AFSK) is used. If AFSK is kept in mind when buying or building RTTY gear the same equipment can be used for both HF and VHF. Looking at Fig 1 if the SSB transceiver is changed for a FM transceiver AFSK will result.

However it is now important that the audio tones used in the mod and demod be the right frequency for AFSK working, mark should normally be 2125 and space 2295. Operating in the VHF/UHF bands using AFSK is a delight compared to using FSK in the HF bands as the critical tuning required on the HF bands is no longer required. Of course some VHF/UHF FSK is used and in such cases the HF bands FSK diagrams will apply.

#### CONNECTING UP A TELETYPE MACHINE

The first question a new RTTY machine owner asks is "How do I connect it up?". The quick answer is "Just connect all parts of it in series and put the loop supply in series with that." A send/receive machine will have keyboard and selector magnet coil connections and these can be identified by using an ohm meter. If the motor is turned slowly by hand as a key is pressed the keyboard terminals will show an intermittent connection. The selector magnet will show about 50 to 200 ohms resistance and if a few volts are applied will give a click as the armature pulls in. Connect these two parts in series and connect the correct voltage to the motor and the machine is wired ready for use. If your machine also has a paper tape player and a paper tape perforating device these are also connected in series.

Well with a few words and four diagrams I have attempted to cover a book full of information, I trust I have given sufficient clues to enable you to connect up your RTTY gear and get on the air.

My efforts to stir up RTTY activity in the coming RD Contest don't seem to be very successful to date so please put your RTTY signal on air in the contest and give me a pleasant surprise. If no one else offers a RTTY award for the best RTTY score in the 1983 RD Contest, the SA Radioteletype Group (SARG) will give one to the operator with the best scoring RTTY log. In addition to getting the best RTTY score as revealed

in the official figures when published you will need to work at least three VKS RTTY stations and submit a signed statement to SARG that all the points in your official CW/RTTY score have been earned by RTTY contacts.

In the April Federal WIA Convention it was decided that in future gentlemen's agreements the words "CW Only" would be replaced by "Narrow Bandwidth Modes Only". This will mean RTTY is included in what some CW operators regarded as CW (Morse) only segments of the bands.

73 from Bruce VK5XI

AR

## REGULATIONS FOR POWER LINES

The Canadian Department of Communications has proposed new noise regulations covering power transmission and distribution lines as well as substations using phase-to-phase voltages from one to 700 kilovolts.

The first-ever regulations of their kind in Canada are designed to protect AM sound broadcasting, but will also benefit AMATEURS!

The measurement limits for the incidental electromagnetic radiation within the regulations is very complicated . . . For example . . . the limits proposed vary from several hundred microvolts per metre in the 160 metre band to tens of microvolts per metre in the 10 metre band, for lines up to 220 kV. The measuring distance is fifteen metres from a point immediately below the nearest line conductor or fifteen metres from the property line of the substation.

AR

#### MURPHY'S PARTY

In the March issue on page 15 Murphy went on a spree with the editorial staff. Indeed it was a great party. After several jabs of Murphy's best potest calculations in the third column of the reprinted article "The 22S — A Common Fault" owed more to the potest than to Ohms Law.

Seriously for the currents quoted resistor R141 would dissipate 111 mW for 86 mA flowing and 150 mW for 100 mA current flow, in a rig in a vehicle in summer this could well produce the effect observed. The voltages quoted are similarly in error.

Thanks to Ian VK3BRY who pointed out Murphy's work during a conversation. —Editor.

## TAKE NOTE

All copy for September AR must arrive Box 300, Caulfield South, 3162 by 25th July.



# POUNDING BRASS

Marshall Emm VK5FN  
GPO Box 389, Adelaide, SA 5001

## A RETROSPECTIVE

Pounding Brass is a year old now (time flies, doesn't it?), and perhaps it is appropriate to look back for a moment and consider what, if anything, we have accomplished.

We've looked at running a CW QSO, keys and keyers, signal reporting, and contest operation, and we've touched on a few other matters as well. Judging from letters received, the material has been of interest to many CW operators and may even have encouraged a few "non-operators" to locate that rusty key and try out this "new" mode.

Subjects yet to be covered include learning/teaching Morse Code, QRP operation, Net Operation, CW DX, and foreign alphabets/codes. If you have any other suggestions for topics please let me know.

### ZERO-BEAT OPERATION

Now here is a term which every good CW op should know, but unfortunately, there are a lot who either don't know or worse yet don't care. To "zero-beat" a signal is to precisely determine the frequency on which it is transmitted.

When a CW operator hears a signal to which he wishes to reply, he must make some effort to ensure that his transmitted signal is on the same frequency. Think about this for a moment — when you tune in a CW signal on your receiver, the pitch of the audio output goes up and down as you tune back and forth across the signal with the VFO dial. Normally you set the received frequency for maximum signal strength and/or a pitch which is comfortable for you to copy. Now, assuming you are going to transmit on exactly the same frequency you are receiving (more about that later), some problems are apparent. If you don't have a narrow filter or highly selective receiver, you have probably noticed that you can hear the received signal, at varying

pitch, over a range of two kHz or more. If the other guy has a filter, or a very selective receiver, and you transmit a kHz or so away from where he is listening, he is not going to hear you.

To be sure that he does hear you, you should a) zero-beat his signal, and b) transmit on exactly the same frequency.

Let's try zero-beating a signal. Suppose we hear a signal at about 3.548 MHz, in CW mode, which we want to zero-beat. If we tune across the signal we find that the pitch of the audio signal decreases until it disappears at about 3.550 MHz. What's happening is that the audio frequency decreases until it is no longer audible, and then finally to 0 Hz. At 0 Hz (zero-beat), if we listen carefully, we can hear a very slight rise and fall in the level of background noise. Now that we've zero-beat the signal, we know that it is exactly 3.55000 MHz, but we still have a problem.

First of all we still have to copy the incoming signal, which we can't do if we can't hear it. Next we have to arrange to transmit on exactly that frequency.

The answer is what is commonly known as "offset".

Still assuming that the rig is going to transmit on the received frequency, we can use the clarifier (or Receiver Incremental Tuning) to alter the received frequency to a comfortable pitch without altering the transmitting frequency. This is a receiver offset.

But in fact most transceivers do not transmit on exactly the same frequency — they have a transmitter offset built in. In other words, when you receive a CW signal at a comfortable pitch, the transmitter will

be offset, putting your transmitted signal somewhat closer to zero-beat. You can use this feature of modern transceivers to great advantage because most rigs have some facility for adjusting the pitch of the CW side-tone (the monitoring tone which you hear when you key the transmitter).

To use the side-tone pitch for zero-beating a received signal, first determine what the rig's transmit offset is by consulting the owner's manual. Next zero-beat a received CW signal, in the CW mode, as described above. Having located zero-beat, adjust the frequency by the amount of the transmitter offset (usually something in the range of 700-1000 Hz). Now note carefully the audio pitch of the received signal and adjust the pitch of the side-tone to match it exactly.

Having done this, all you have to do to zero-beat any CW signal is tune to the exact pitch of your side-tone, and you will transmit on a frequency that is near-as-dammit zero-beat. If you don't like copying at that audio pitch (700-1000 Hz), use the clarifier to alter the received frequency without affecting the transmit frequency.

More accuracy can be achieved by using test equipment to measure the offset and set the side-tone pitch, but this method is accurate enough for most purposes.

Having mastered this technique, you will be able to recognise expertise when you hear it — if you call CQ and a station comes back with the same pitch as your side-tone, you can say to yourself — "There's another guy who knows what he's doing!"

73 FER NW.

AR

## COMMERCIAL CHATTER

### STEWART ELECTRONICS

Stewart Electronics stock a wide range of electronic parts.

For makers and users of printed circuit boards a very extensive range of Bishop Graphics is stocked. All the tapes, pad layouts and other drafting aids for laying out really first class artwork.

Also from the Bishop Graphics range are printed circuit copper products. These are a range of copper tapes, patterns and boards. These copper products can be used to repair damaged PCBs or to lay out experimental PCBs.

Datamark dry transfers are another stock item. These are a range of the dry transfer letters which are so popular today. As well as sheets of individual letters and numbers there are sheets of commonly used words. Having the word as a whole transfer makes alignment just so much easier, which will result in a better looking panel on your next project.

Whilst the component side has been neglected so far it should be noted there is a veritable Aladdin's Cave of all common and hard-to-get parts. A most comprehensive range of parts, computer bits and other assorted goodies are kept in stock.

Quality parts are backed up by a very knowledgeable staff always ready to assist. This is a rare combination today.

Stewart Electronics are located at 44 Stafford Street, Huntingdale, Victoria. Phone (03) 543 3733.

AR



# INTERNATIONAL NEWS

## LIBERIA

The Liberia radio amateurs are out to draw attention to the plight of the Ganta Leprosy Colony.

Special call letters A81LC, A82LC, A85LC, A87LC, A88LC and A89LC have been authorised by the Ministry of Post and Telecommunications. This will be a special On-The-Air Activity. It will start on 6 May, 1983 at 1900 hours and continue to 31 December, 1983, 2400 hours UTC.

The members of the Liberia Radio Amateur Association will be organised to operate special designated stations in the counties identified in the special call signs. Amateurs who are contacted under these special call signs will be told about the reason for the special activities.

Bob Johansson, SM4CWY is special QSL Manager for this activity. His address is: PO Box 134, S-67101, Arvika, Sweden. All QSL cards and any other communications must be sent to Bob.

There will be a special award for any station who submits satisfactory evidence of having worked all six stations on any band. At least two of the six contacts must be made by CW.

The needs of the Ganta Leprosy Colony are great and urgent. The Liberian amateurs hope that amateurs world-wide will identify themselves with the amateurs in Liberia. The aim is to make 60 000 contacts during the period stated above.

## MARCONI RADIO SOCIETY RE-LAUNCHES HISTORIC CALLSIGN DURING WORLD COMMUNICATIONS YEAR

The callsign used to introduce Britain's first scheduled radio entertainment broadcast, 2MT, will be heard on the amateur bands later this year after a 60-year break in transmissions.

Home Office approval has been granted to the use of the callsign G2MT by the Marconi Radio Society, a group formed recently by amateur radio enthusiasts employed at the Stanmore headquarters of Marconi Space and Defence Systems Limited and at other company sites in the locality.

The callsign will be used at Stanmore for the first time at 1200 UTC on Saturday 2nd July 1983 using equipment owned and operated by members. The frequencies used will depend on the prevailing propagation conditions but it is hoped to organise contacts with amateur radio clubs affiliated to the BBC and with similar groups within the GEC-Marconi organisation.

Marconi's Wireless Telegraph Company Limited was first granted an experimental licence in the summer of 1920 to use the callsign to introduce news bulletins. This permission did not apparently extend to music, even in the accompanying role, and the licence was swiftly revoked following

the broadcast of 'dramma per musica' by a Danish tenor.

Following representations to the then Postmaster General by the Wireless Society of London (now the Radio Society of Great Britain), the company was later authorised to recommence transmissions. And so, the first scheduled entertainment broadcast in the UK was transmitted on 700 metres from Writtle, near Chelmsford, on 14th February 1922 under the callsign 2MT ('Two-Emma-Tock'). The 'G' (for England) has now been added to accord with current practice.

The licence restricted broadcasting to half an hour each Tuesday evening and the station was required to cease transmitting for three minutes in every ten. These frequent intervals were spent in checking to hear whether any complaints had been received.

The broadcasts provided amateurs with invaluable checking references and their content set the pattern for later public broadcasting programmes; for example, the first radio play was produced (Cyrano de Bergerac) and a rudimentary 'Children's Hour' was evolved before transmissions ceased in January 1923.

## ST VINCENT AND THE GRENADINES

These islands have become the 158th member of the ITU on 25th March 1983.

## JARL

The first amateur satellite is due to be launched in 1983.

Japanese radio law has been amended to allow ATV including novices.

Use of repeaters was permitted in Japan last year and shortly 130 stations will open on the 430 MHz and 1200 MHz bands.

JARL celebrated, on 9 October last, the 30th anniversary of the reopening of amateur radio in Japan after World War II at the Hotel Okura in Tokyo in attendance of about 500 participants.

The amateur radio activities in Japan were suspended during WW II and for several years after the war, but thanks to the united efforts of a number of people including the great pioneers in amateur radio, they came back to the air again in 1952. In the past thirty years, amateur radio in Japan has spread wider and wider with technical advances particularly in radio science and with pertinent guidances by the administration through several renovations of the amateur radio institution. No other country in the world now has so many radio amateurs as Japan.

In support of the activity of World Communications Year '83, Ministry of Posts and Telecommunications and Japan Amateur Radio League (JARL) are planning to have The World Amateur Radio International Conference (WARIC) in Tokyo this September.

In addition, for the 24th All Asian DX Contest to be held in June and August 1983, cups commemorating the World Communications Year, will be awarded to continental winners (first in each continent

on single operator multi band) by the Minister of Posts and Telecommunications in addition to the presentation of certificates from the Minister and medals from JARL as in an ordinary year.

## RAST HOSTS SEANET

The SEANET Convention (Southeast Asia Net), hosted by the Radio Amateur Society of Thailand, held in Bangkok 12 to 14 November, 1982, was acclaimed by the attendees as the largest and best SEANET convention to date. With more than 150 registrants from 20 different countries, all three IARU Regions were represented. The convention was formally opened with the Friday evening banquet, at which time the deputy minister of communications of Thailand welcomed the delegates and set the theme for the three-day meeting. Authorisation was granted for operation of a station at the Imperial Hotel, where HS05EA went on the air and was given a good workout.

## CHAIRMAN VISITED TAIWAN

David Rankin VK3QV, Chairman Director Region III, on the way to Singapore from Tokyo stopped over at Taipei on 16 October, 1982. He, accompanied by Tim Chen, BV2A/BV2B, paid a courtesy visit to The Post & Telecommunications Department of ROC discussing amateur activities of the world and the story of IARU and Region III Association. He was told of the possibility of expanding amateur radio on this island.

## AMATEUR RADIO IN CHINA

The JARL observation group, consisting of eight JA amateurs headed by Mr Makoto Inami, JA6AV, Vice-President of JARL, made a tour to Beijing, Chenchou (Monastery Shao Lin) and Shanghai in China from the 6th to the 13th October last year.

They were warmly received by senior officials of the Chinese Radio Sports Association and all others concerned at all the places they visited. They exchanged views on various aspects of amateur radio in China and Japan, which promoted a better understanding and friendship of radio amateurs in both countries.

What were specially noteworthy on this tour were: that JA amateurs of the group were permitted to operate the BY1PK station, and that they participated in fox-hunting at the Chinese National Radio Direction Finding Convention as guest participants.

The Chinese National Radio Direction Finding (fox-hunting) Convention was held in the vicinity of Monastery Shao Lin about 70 km south west of Chenchou in Hanan Province. The Chinese type of fox-hunting is a combination of pedestrian exercise and orienteering which is considerably different from the conventional type of fox-hunting in other countries. The participants compete in how fast they can find as many foxes as they can in a wider area.

AR



# VHF UHF -

# an expanding world

Eric Jamieson VK5LP  
10 Quinns Road, Forrester, SA 5233

All times are Universal Co-ordinated Time, indicated as UTC.

## AMATEUR BAND BEACONS

FREQ	CALL SIGN	LOCATION
50.005	H44H1R	Honiara
50.008	J42IGY	Mie
50.020	G83SIX	Anglesey
50.060	KH6EQI	Pearl Harbour
50.075	VS6SIX	Hong Kong
51.020	Z11UHF	Auckland
52.013	P29SIX	New Guinea
52.100	VK0AP	Macquarie Island
52.200	VK8VF	Darwin
52.250	Z12VHP	Palmerston North
52.300	VK6RTV	Perth
52.320	VK6RTI	Carnarvon
52.350	VK6RTU	Kalgoorlie
52.370	VK7RST	Hobart
52.420	VK2RSY	Sydney
52.425	VK2RGB	Gunnedah
52.436	VK3RMB	Hamilton
52.440	VK4RTI	Townsville
52.470	VK7RNT	Launceston
52.500	Z12MHF	Mt Clivie
144.400	VK4RTI	Mt Mowbrall
144.420	VK2RSY	Sydney
144.465	VK6RTW	Albany
144.475	VK1RTA	Canberra
144.480	VK8VF	Darwin
144.550	VK5RSE	Mt Gambier
144.600	VK6RTI	Carnarvon
145.000	VK6RTV	Perth
147.400	VK2RCW	Sydney
432.410	VK6RTI	Carnarvon
432.420	VK2RSY	Sydney
432.440	VK4RMB	Brisbane
432.450	VK3RMB	Mt Bunningong

No changes appear in the beacon list this month.

It is interesting to note that VK5RSE in Mount Gambier continues to be always available at my location, always weak but always there. Sometimes it is only audible with the mast-head pre-amp switched on, so one could say signals vary between the noise threshold to S7 when good tropo conditions exist. So, as far as I am concerned it is a very constant reliable pointer to band conditions and is serving the purpose exactly that is expected of a beacon.

## VK0AP ACTIVE

Stan VK3VD worked Peter VK0AP at 04.25UTC on the 18th June

## NEWS FROM NEW SOUTH WALES

Gordon VK2ZAB has written again with some more news of 2 metres and above in New South Wales. We are certainly very interested in what they are doing in that state, thanks for writing Gordon.

(The big news at this QTH (Berowra Heights) is an SSB tropo scatter contact on 144.020 MHz between VK2ZAB and Doug VK3UM at Chirnside Park (Melbourne) at 1128 on 2/5/83.

"Doug and I have tried several times over the past few weeks and have never failed to at

least detect the other's signal punctuated by meteor pings and occasional copy of odd words and sometimes phrases. At 0045 on 1/5 Doug was 5 x 3 here and could hear me about the same strength working Eddie VK1VP. When I heard Doug and responded the linear expired due to the excitement and reduced my power to twelve watts PEP which made things a bit difficult! Anyway, there was some form of signal enhancement operating at the time and as we were after a tropo-scatter contact to prove it could be done frequently we were not that disturbed.

"The contact on 2/5 was tropo-scatter all right and the signals were 5 x 1 both ways for about 45 seconds. We believe this is the first time a two metre contact has been made between Sydney and Melbourne. If this is not so, someone will no doubt correct us!

"Doug also made contact with Ralph VK1RK at 1100 on 1/5 and we suspect that this is the first 2 metre SSB contact between Canberra proper (Ralph is at Hughes) and Melbourne.

"To add to my comments in the previous letter, I checked my log for April and extracted those contacts made with stations beyond the local contact range (160 km or 100 miles). They are:

On 2 metres SSB:  
Doug VK2XDH Armidale 344 km 8 times  
Don VK2ADY Tamworth 276 km 9 times  
Jack VK2ZQX Gunnedah 300 km 12 times  
Barry VK2KAY Gunnedah 300 km 19 times  
Ross VK2DVU Condonbolin 372 km 1 time  
Ralph VK1RK Canberra 260 km 3 times  
Brian VK2AKU Narrabri 384 km 12 times  
Glen VK1KAA Canberra 260 km 5 times  
Derrick VK2DOA Narrabri 384 km 10 times  
Eddie VK1VP Canberra 260 km 4 times  
Bob VK1RC Canberra 1 time  
Peter VK2ADU Tamworth 276 km 2 times  
Dave VK2ZDY Moree 473 km 2 times  
John VK2YEZ Griffith 476 km 1 time  
Allen VK2KAW Wagga 384 km 1 time

On 70 cm SSB  
Barry VK2KAY Gunnedah 300 km 7 times  
Eddie VK1VP Canberra 260 km 7 times

"On two metres signals were also heard from VK4LC (about 650 km), VK3UM (694 km) and VK2MQ (473 km) but no firm contacts were made at the time. On 70 cm from VK2ADY (276 km) also. As months go April was about average!"

That last statement bears a comment in that, I would be most happy myself to work so many stations on those two bands for such an average month! Most activity here in VK5 still revolves around the continuing saga of 144 and 432 MHz contacts between VK5ZRO in the first instance, joined by others from time to time, to Don VK5ZRG at Whyalla (220 km) and Neil VK5ZEE at Whymara (about 500 km). The ease with

which Bob can make these contacts from the other side of my big hill makes me green with envy, even if I can hear the Mount Gambier beacon all the time!

## BEACONS SYSTEM IN USA

Further word comes from Bill W3XO in "The World above 50 MHz" in May QST and some suggestions for implementing the system of unattended beacons in that country. Only narrow segments in each band have been permitted, 20 kHz on 50 MHz, 10 kHz on 144 and 432 MHz. When one considers there are 48 US states in the main area of their country, with Alaska some distance away being 49, further still Hawaii number 50, and all will no doubt want to share in what has been fairly commonplace in many parts of the world for quite a few years. Bill, W3XO, has worked out that it would need about 80 beacons, and this on the basis that they should not be less than 125 miles apart (the US is not metric) but there should be one at least every 250 miles, with the highest density in the high activity areas of the East and lower West Coast; beacons also would need to be located along the coasts to provide an indication of enhanced propagation.

Bill is rightly concerned at the possibility of considerable QRM from beacons close to one another in frequency, and distant separation can become short separation under improved tropo conditions. So much so, that he suggests they may need to look at time-sharing. To accomplish this, he says, each minute might be divided into four 15 second segments. In addition to selecting or being allocated a specific frequency, each beacon operator would choose or be given a segment. In this way the number of beacon segments is multiplied by four. Until enough beacons come on the air, however, there seems no immediate need to implement time segments. Beacons should be able to operate continuously until potential conflicts develop.

We all wish the US success with their new venture, there will surely be some problems but if commonsense prevails they can be sorted out. They might well consider seeking some opinions from the European boys regarding 2 metres and 70 cm as they have many beacons in operation although over larger segments certainly but still at very close geographical distances. Here in Australia we are not faced with such decisions as we have only 7 states to consider, plus Canberra, and our distances are considerable.

Far be it for me to offer too much in the way of advice to the US but one way might be to have a lesser number of beacons initially and spread them out well, and see

how propagation affects them, where they are being heard etc. Whatever the outcome, particularly on 6 metres, it can only be good on a global basis by providing a 24 hour signal which might be heard somewhere sometime!

I also note from the May "QST" that a new 1% metre (220 MHz) world record has been established. "After several months of trying, following a 2 metre to 1% metre crossband contact last November, KP4EOR and LU7DJZ were finally able to complete a two-way contact on 220 MHz at 0033 on 9/3/83 to establish a new terrestrial world record for the band. Using atlas-listed co-ordinates for San Juan and Buenos Aires, the distance works out to be 3670 miles (5870 km), far exceeding the old published record of 2540 miles between W6NLZ and KH6UK established in June 1959.

"KP4EOR was running about 200 watts output to a single 17 element Boomer, and was 559 on CW and 5 x 5 on SSB at LU7DJZ's QTH. On his end, LU7DJZ runs 70 watts to two stacked 10 element yagis. His signal was 539 at David's location. Following their success, the two are trying to see how often they can work this band via the transequatorial propagation route, as well as, beginning next August, investigating the possibility of contacting on 70 cm.

"Congratulations are in order to both KP4EOR and LU7DJZ for this record breaking accomplishment. Their achievement surely marks another major event in the history of the world above 50 MHz."

We here in Australia join in congratulating the two participants. Although we are unable to operate on that band and are therefore unable to try and better the distance, we nevertheless say well done.

## NEW 3300 MHz RECORD

From "Break-In" for April 1983 comes news that "on 6th March 1983 two teams from the Wellington VHF Group succeeded in creating what is believed to be a new world record on this band at 545 km.

Peter Williams ZL2ARW and John Yaldwyn ZL2TRV travelled to Te Paki trig station at a height of 1019 metres ASL and located just south of Cape Reinga at the tip of the North Island.

"At the southern end were John Shoreland ZL2AQE and John Wysocki ZL2TWS who operated from the Stratford plateau on Mount Egmont at 1200 metres ASL.

"The contact took place at 09:30 AM local time when signals were heard by ZL2AQE, they were so weak that initial contact was made on CW by Peter making and breaking one of the connectors in the transmitter line (Tut, tut! Fancy not taking a key on such a jaunt... SLP). Shortly after this time band conditions improved and the claimed contact was on FM with 5 x 9 signals both ways. The claimed distances is 545 km and subject to confirmation is a significant improvement over the G4BYV/DB5KS distance of 464 km on 14 September last.

"Equipment line-up at both ends comprised a crystal controlled multiplier chain of 1 watt output to a 4 foot dish, on receive the ZL2ARW team used a GaAs FET preamp to an interdigital converter (VHF Comms design).

The ZL2AQE team fed the input signal straight into the converter without the preamplifier.

"Congratulations to both teams on a very fine effort, especially to Peter ZL2ARW and John ZL2TRV who drove all the way from Wellington to Te Paki at Cape Reinga a round trip of 1130 km."

We in Australia offer our congratulations too for a fine dedicated effort, and one needs to be dedicated to drive such distances, but it seems the results have been worth while.

Incidentally, I note also that the ZL2ARW team was equipped on their journey with all bands from HF through 2 metres, 70 cm, 2300 MHz, 5 GHz and 10 GHz. However, of the microwave bands the only successful contact was that on 3300 MHz. The ZL2AQE team was similarly equipped plus ATV equipment!

## EME EXPERIMENT

The transmissions from K8HUH (see May "AR") via the 150 foot dish and the moon proved to be a non-event for me. I listened around 432.100 MHz for at least an hour on the three mornings of 14/5, 15/5 and 16/5 and although I thought I convinced I could hear something in the noise once I am not really sure I heard anything!

After the first try I telephoned Chris VK5MC to see what success he had with his dish, and to enquire if K8HUH was actually on. He confirmed he had worked the station but signals were no more than 10 dB above the noise. This being so it seemed my 16 dB of antenna gain (less coax losses) would not be adequate. To assist the next day's trials I got out the GaAs Fet pre-amplifier and coupled this into the system. This certainly made an improvement judging from the number of motor vehicles causing QRM on the band so I knew things were working fairly well. However, despite all the trying nothing happened, but it was an experience and worth a try. The fact that the total period the station was on, the sky was completely covered with cloud, didn't help as I had to rely on bearings taken with the prismatic compass. At least I know now my antenna is only three degrees off true corrected north, so it was not necessary to spend a lot of time outside in the rain with the compass!

Chris VK5MC advised he had worked K8HUH on Saturday 15th May on CW and SSB with signals up to 10 dB over noise and again on Sunday 16th May on CW. He started with 10 watts and with increasing power made contact at the 50 watts level.

As far as we can ascertain VK4ZBN, VK4AQ and VK6ACY have heard the station weakly and Hans VK6ZT is believed to have worked it.

The transmitter was running at 150 watts solid at the feed with circular polarisation, which gave 3 dB loss to most people, the frequency being 432.095 MHz.

Conclusion reached was the test was not as effective as WA6LET some years ago.

## WILLIS ISLAND

Willis Island will soon be reactivated on 6 metres. The callsign VK9ZS has been

allocated to Graeme Smith who will be on Willis Island for the next six months.

The rig will be the FT680 from the VK6 DX Chasers Club which was used on the Heard Island Expedition. The antenna will be the beam used on Heard Island provided by Werner Wulf. A 100 W amplifier will be on loan from VK3AJU. The Lunar amplifier also made the trip with VK0HI.

So look out in the coming months for VK9ZS. Graeme will have a keyer which will be used to stir up activity when conditions look promising.

## CLOSURE

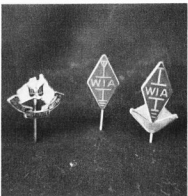
Just before closing, may I mention my first report (April) of the fire destruction of the VK5 beacons was not quite correct as it turned out. Fortunately Mark VK5AVQ was able to report salvaging most of the equipment, but the residence which was the source of power was destroyed, hence the beacons would have been off the air anyway. So that news is a bit brighter after all!

It must have been a quiet month around the country as very little information has come to hand. Hopefully, the mid-winter DX period might treat us well by the time you read this.

Closing with the thought for the month: "Maturity is the ability to do a job whether or not you are supervised, to carry money without spending it and to bear an injustice without wanting to get even."

73, The Voice in the Hills

## METAL BADGES



## ATTRACTIVE CAR BADGES AND STICKPINS

Stickpins are in three designs — Australia and wings, diamond logo and diamond with boomerang at base for engraving your callsign.

Car Badge is a larger replica of the Australia/wings badge.

Now obtainable from divisions, Federal Office and Magpups.

# SPOTLIGHT ON S W L i n g

Robin L Harwood

5 Helen Street, Launceston, Tas 7250

Well, the peak of the wintertime DX conditions has now passed, yet many interesting signals are continuing to be heard during the daylight hours. However, more sudden ionospheric disturbances, due to solar flares, have caused a fall in propagation particularly to the higher frequencies of 10 MHz and above. Lower frequencies are affected, but not to the same degree. Usually the east west path suffers the most. When these disturbances are present, it gives us an opportunity to hear the lower powered outlets, usually masked by the larger powerhouse signals. The majority of these lower powered outlets serve a district or provincial audience and are not designed for overseas listeners.

## MANY STATIONS DUE TO FLARES

One example of this is Radio Malaysia in Kuala Lumpur on 6025, which is normally sandwiched between Radio Moscow and either FEBC International or the AFRTS. Yet on the 17th of May, I heard it here in Launceston between 1230 and 1300 UTC. It is a domestic station and should not be confused with Suara Malaysia — the external service also in Kuala Lumpur, which is heard elsewhere on the 49 metre band in the evening hours.

Yet another station that is not normally heard here, was also observed during one of these flares. It was the AFRTS Far East Network in Tokyo on 6.155 MHz. Usually VLR at Lyndhurst (VIC) on 6.150 prevents any signals at 5 kHz either side from being heard clearly. But as the skip distance seemingly does alter and increase, their signals were down and there was a rapid flutter on their carrier, allowing the FEN to be heard. Later on, another Asian signal closer masked their signal. The FEN in Tokyo is also heard on 3.910 MHz but its programming varies from that on 6.155 MHz.

## WE MISS THIS ONE

Many VK amateurs were disappointed that they could not work PA6PCJ — the special station mounted by Radio Nederland in Hilversum as part of WCV '83. The station was not heard very well in Australia due to the poor propagation over that weekend. Two stations that worked PA6PCJ were Arie VK2AVA and Morrison VK3BCY. I heard the station myself only once on 14.070 MHz and then it was barely audible.

## SPECIAL STATIONS

Radio HCJB, the religious broadcaster in

Quito, Ecuador, mounted a special amateur station using some of their huge antenna arrays, when they weren't required by their broadcasting transmitters, with the call of HC1JB naturally. As I am writing these notes in late May, I cannot comment on how their efforts went. However another group, the Marconi Radio Society, plan to re-activate one of the historic call signs in Great Britain, first used over fifty years ago. It was used in the Empire broadcasts, which were aired prior to the formation of the BBC's external service in December 1932. The call will be G2MT, but I do not have any additional information relating to their operating times or frequencies, yet they may be found in International News.

## ENJOYABLE PROGRAMMES

One programme that I find interesting on the BBC World Service is called "Listening Post". This is not a DX programme nor is it connected with technical aspects of the hobby, rather it is a compilation by the BBC Monitoring Service in Caversham Park, of what the various international or local broadcasting stations are saying about news and current events in the World. Several foreign language broadcasts are translated and summarised into English. This gives an opportunity to those who don't know these other languages, an insight into what some of the foreign language newscasts contain. You can hear it at 1115 UTC Wednesdays on the usual BBC World Service frequencies.

The regular programme for listeners who want to keep up with alterations to BBC World Service frequencies, or have difficulties receiving BBC programmes, is called "Waveguide". This ten minute programme is heard at 0915 UTC on Mondays.

## MAKE UP YOUR OWN MIND!!

Have you heard a woman reading out groups of numbers in German or Spanish on unusual frequencies? If you have, you must be wondering, as I have, what the identity of these stations are. There has been speculation for some time now, that these are perhaps engaged in clandestine or espionage activities. They base this on the fact that these stations do not adhere to regular operational hours or frequencies and seldom seem to be used on consecutive days. I did hear them on 9.325 or 11.545 MHz. Listen for yourself and make up your own mind.

## HARMONICS

Recently I was trying to identify a station

on 1.654 MHz with music and announcements. As it was very weak, I was wondering if it could be 3MU at Monash University, which reportedly utilises that channel. I had also noticed that a Sydney listener claimed to have heard it. However, it only runs a watt on a cable system around the university campus to speakers. It would barely be able to get out of the campus. However, the station this listener heard presumably, is not that but is rather the second harmonic of 3GI at Sale on 828 kHz. I managed to hear the Victorian State news at 1210 UTC which positively identified it. Other ABC transmitters also seem guilty of putting out harmonics. 5AN in Adelaide on 891 kHz has been heard on its fourth harmonic of 3564 kHz by numerous amateurs now. Radio 3LO at Sydneyham is heard here in the evening and early morning hours on its fifth harmonic of 3870 kHz.

## PLEASE IDENTIFY

Another trend I have noticed is that people are assuming that the station they are hearing on a particular channel, is in a certain country because it is listed in a bulletin or in the WRTU as being operational at that time etc. I urge you to wait for some form of identification announcement to verify or otherwise where the station is. This has been highlighted by a listener in northern NSW who thought he heard Madras on MW at 1030 UTC. As it is still daylight in India, it is highly unlikely it was in Madras. It seems likely that the listener may have heard Indian music from another station. So make sure that you try and identify the station, and if in doubt report it as unidentified. Others more experienced will either confirm it was that station, or inform you as to its identity.

Well, that is all for this month. If you have any news or comments for inclusion in this column, please write by the 15th of July. Until August, the best of 73s and good DXing! — Robin.

AR



Please  
remember  
your STD code  
when you  
advertise in  
HAMADS.



# ALARA

Australian Ladies Amateur Radio Association

Margaret Loft VK3DML  
28 Lawrence Street, Castlemaine, Vic 3450

Hello again for this month, don't forget the Annual Meeting on Monday 25th July on 3.570 MHz at 1030 UTC. If you cannot join the net, send your votes on the form in the July Newsletter. Remember it is your association and we need your support.

## BIRTHDAY NET

ALARA will be eight years old and the birthday net will be on Monday 22nd August on the usual frequency.

Welcome to new members: Narelle VK1NG and to Heather VK4NEZ and hope you both enjoy being a part of ALARA.

Best wishes to all who are sitting for exams next month and hope you are all successful.

## BYLARA AWARD

Available to all YLs, OM's and SWLs (on a heard basis) for working YL members of BYLARA (British).

## DX OUTSIDE EUROPE

Work ten members (YL) of BYLARA to include at least six British members. Starting date: 29th April 1979. YLs must be members at time of contact. All bands; all modes; one contact per member.

No QSLs necessary; send log data,

signed by applicant with fee of £1.50, or 12 IRCs or \$US4.00 to Mrs D Wood; GM4COO, 13 Scotland Drive; DUNFERMLINE, Fife KY12 7SY, Scotland.

Look for the G girls on activity Day, the 6th day of each month, call CQ YL on the hour and gain some points for their award.

## ALARA CONTEST

ALARA's Contest No 3 will be on Saturday 12th November and this year a Trophy for the top score by a YL over five years will be added to the certificates. We hope this will foster interest in the contest, so keep this date in mind. Contest rules and a full list of ALARA members will appear in AR prior to the contest.

Membership of ALARA is down this year, unfortunately a number of YLs did not rejoin. The numbers on the nets are down also, so please try and come up on Monday night and help boost the numbers again.

Photo this month is from Marlene VK5QO on right and Jenny VK5ANW. If you enjoy seeing the photos how about sending one of yourself to me for others to see!

Until next month all the best to all.

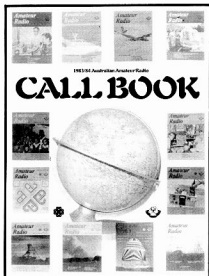
33/73 88

Margaret VK3DML

AR



L to R: Jenny, VK5ANW editor for Five Eighth Wave column in AR meets with Marlene VK5QO editor of our newsletter.



## The 1983-84 CALLBOOK

Will be available at the beginning of September.

New and updated data, repeater listings and over 3000 new and updated callsigns.

Don't miss out this year.

Order your copy now from divisions, Magpubs, Box 300, Caulfield South 3162 or Federal Office.

**\$5.75 plus postage.**

# AWARDS

At its meeting in April this year, Federal Council approved some changes to the rules governing WIA awards. Further, preliminary approval was given for a new DXCC certificate and the introduction of single and all band stickers.

Mike Bazely VK6HD  
FEDERAL AWARDS MANAGER  
8 James Road, Kalamunda, WA 6076

## RULE CHANGES FOR ALL WIA AWARDS

### AMENDMENT TO PRESENT RULE 4.1 (VERIFICATIONS)

It will be necessary for the applicant to produce verifications in the form of QSL cards or other written evidence, from the station contacted, showing that two-way contacts have taken place.

### AMENDMENT TO PRESENT RULE 4.5 (VERIFICATIONS)

In lieu of forwarding QSL cards as set out in Rules 4.1 to 4.4 above, a list giving details set out in Rule 4.3, certified by the Awards Manager, Secretary or Council Member of a division of the Wireless Institute of Australia, or two licensed amateurs known to the applicant, should accompany each application for membership.

Every person certifying an award application must sign the following declaration: *I have checked the (insert number in words) QSLs submitted by (insert call sign) and certify that the details attached correspond with the verifications inspected by me. Signed ...*

### AMENDMENT TO PRESENT RULE 5.1 (APPLICATIONS)

Applications for membership shall be addressed to the Federal Awards Manager of the WIA, accompanied by the verifications and check list with sufficient postage enclosed for their return to the applicant, registration being included if desired. WIA members should also include their address label taken from the latest edition of "Amateur Radio".

## NEW DXCC RULES

### DELETE OLD RULE 3.4 (OPERATIONS) AND INSERT THE FOLLOWING NEW RULE

The following criteria will be taken into consideration when determining the DXCC country list.

- The ARRL DXCC countries list.
- Whether the country's government or administration recognises and issues amateur radio licences.
- The Australian regulations which prohibit contacts with unlicensed stations.
- An Australian government directive prohibiting contacts with a particular country.
- The starting date for any new country to be decided by the Federal Awards Manager.

### DELETE OLD RULE 3.6 (OPERATIONS) AND INSERT THE FOLLOWING NEW RULE

All stations must be contacted from the same DXCC "country". NB: Amateurs moving from one call area to another will be given the option of transferring credits or starting on a new DXCC award. Once this option has been exercised it will not be reversed.

## NEW DXCC CERTIFICATE

What sort of DXCC certificate would you like? A multi-coloured map of the world with spaces for endorsement stickers? I would like to get this programme off the ground as soon as possible so if you do have any views please let me know.

It is suggested that current certificate holders will be allowed to apply for the new certificate. The actual cost of the certificate will be charged to those who wish to make the change.

## WORKED ALL Y2 AWARD

This award is available to both licensed amateurs and SWLs. The award is available for all contacts after 1 January, 1980 and the minimum requirement is for twenty points from ten districts. The districts are identified by the second letter of the suffix. The districts are as follows:

A and U	=	ROSTOCK
B	=	SCHWERIN
C	=	NEUBRANDENBURG
D and P	=	POTSDAM
E	=	FRANKFURT
F and X	=	COTTBUS
G and W	=	MAGDEBURG
H and W	=	HALLE
I and Q	=	ERFURT
J and Y	=	GERA
K	=	SUHL
L and R	=	DRESDEN
M and S	=	LEIPZIG
N and T	=	KARL-MARX-STADT
O	=	BERLIN

One point is gained for each completed QSO. A GCR list showing call sign, band, date, time and report is acceptable. Though this award is called "the Y2 award" stations using the prefix Y2 through to Y8 are included. No Y9 stations will count. Applications to RADIOKLUB der DDR, HOSEMPNNSTR 14, DDR-1055, BERLIN, German Democratic Republic, together with ten IRCs to cover costs and postage.

AR



The WIA need  
**YOU**  
to enroll a new  
member today

If EVERY member joined JUST ONE new member, YOU would be spreading the joy of amateur radio.

## POISON PEN LETTERS



Readers are advised that letters of an insulting or abusive nature have been received by amateurs. These letters have been unsigned with a false name or call sign.

If you should receive such a letter you should immediately notify the authorities. Unless you do this the police and postal authorities will be unable to stamp the practice out.

Help stamp out this practice now.





# AMSAT AUSTRALIA

Colin Hurst VK5HI  
8 Arndell Road, Salisbury Park, SA 5109

## NATIONAL CO-ORDINATOR

Graham Ratcliff VK5AGR

## INFORMATION NETS

### AMSAT AUSTRALIA

Control: VK5AGR  
Amateur  
Check in: 0945 UTC Sunday  
Bulletin  
Commences: 1000 UTC  
Winter: 3.680 MHz  
Summer: 7.064 MHz

### AMSAT PACIFIC

Control: JA1ANG  
Time: 1100 UTC Sunday  
Frequency: 14.305 MHz

### AMSAT SW PACIFIC

Control: W6CG  
Time: 2200 UTC Saturday  
Frequency: 28.880 MHz

Participating stations and listeners are able to obtain basic orbital data including Keplerian elements, from the AMSAT Australia net. This information is also included in some WIA Divisional Broadcasts.

## THANKS BOB ARNOLD

Since the August 1977 issue this column has been diligently prepared by Bob Arnold VK3ZBB. Bob has succeeded in compiling one of the most informative and constructive amateur satellite columns of any amateur magazine that you care to mention. Anyone who cares to peruse past issues of AR will find a wealth of useful operating hints, orbital parameters, future missions etc. The outstanding bonus however is a fully documented history of the happenings of the amateur satellite scene both world and Australia wide, over Bob's reporting period. Nonetheless Bob has decided that now is an opportune time to hand over the reins to another scribe, and thus allow him more time to research some ongoing projects that he has in hand. Therefore Bob, on behalf of your many readers and friends, I sincerely thank you for your contribution to the advancement of amateur satellite communication through the medium of this column.

## THANKS CHARLIE ROBINSON

Effective 30 June, Charlie VK3ACR has relinquished his position as National Co-ordinator of AMSAT Australia. Charlie stepped into the position many years back and has carried out the position with

sincere dedication. Perhaps the most outward indication of the co-ordinator's position is the dissemination of news and updates. The Sunday night skeds have, in recent years, become a significant event for amateur satellite users throughout Australia. On behalf of the regulars and the many listeners that you have kept informed through your efforts Charlie, our sincerest thanks. It is anticipated however that you will still be a regular.

## NEW NATIONAL CO-ORDINATOR

Graham Ratcliff VK5AGR has agreed to take over this position following Charlie's decision to stand down. Graham, you have a hard act to follow but we wish you well in the future as co-ordinator. Any matters relating to AMSAT Australia can be directed to Graham either during the Sunday evening skeds or by mail, QTHR.

## FIRST ASTRO-AMATEUR IN SPACE

W5LFL/Space Mobile has been approved for the space shuttle mission STS9. The mission is planned for around 30 September 83, with the primary objective of carrying aloft the joint US-European spacelab in the shuttle's cargo bay. Astronaut Owen Garriott will operate using a specially designed 2 metre transceiver on the low end of 144 MHz (approx 144.3) for one hour per day, during his off duty time. He will try to provide amateurs around the world with their first QSO via a manned orbiting spacecraft. Time, frequency and procedures will be defined later. It is stressed that the operating procedures will have to be strictly adhered to and thus avoid QRM and give everyone a chance to QSO. Abuse of the procedure could see the cessation of operations immediately. Further details as they come to hand...

TNX TO MODE J NEWSLETTER.

## STATUS REPORTS

All satellites at the time of preparation of these notes were performing normally. Some slight concern has been expressed in recent weeks once again in regard to the batteries on board Oscar 8. Changes in the operating schedule of Oscar 8 do take place at times and these are due to the efforts of the command stations to ensure that the five years of operation to date can be continued for as long as can practically be possible. Hence if it is not on the scheduled mode please realise the reason why. The current schedule for Oscar 8 is mode A: Sunday, Monday, Tuesday and mode J: Thursday, Friday and Saturday. Wednesday is the designated experimental day and as such is not available for communication. UOSAT Oscar 9 is still

undergoing status checks in an endeavour to free the snagged cables preventing deployment of the boom. At weekends UOSAT primarily transmits digital talker telemetry, 1200 baud ASCII telemetry as well as 1200 baud ASCII bulletin.

## REQUEST FOR ASSISTANCE

Despite the five to six week delay in the compilation of these notes and therefore the understandable risk of presenting out of date news in this column I would ask the assistance of satellite operators in providing news of their activities for presentation in this column. In this regard we are no worse off than overseas publications who in some cases have even longer lead times. Nonetheless this column has, in the past been compiled with the future in mind and that course will continue. Any newcomer to satellites need only research back issues of Amateur Radio and, in this particular column, the previous presenters have compiled a literal compendium of useful information. This column can only be as good as the input received, so how about it chaps...

De Colin VK5HI



# QSP

## CONGRESS APPROVES FUNDING TO SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE

Following years of bitter debate, and even one "Golden Fleece" award from Sen. William Proxmire, Congress has finally approved funds to be used in the search for extraterrestrial intelligence (SETI). This fiscal year, the National Aeronautics and Space Administration budget will include \$1.5 million for an instrument that attaches to a radiotelescope. The instrument, a signal analyzer, will eventually study 10 million radio frequencies simultaneously in the search for a message from intelligent beings elsewhere in the universe.

Searches conducted to date have been disappointing, but many scientists believe that a concerted effort should be undertaken as soon as possible. Carl Sagan, for example, lobbied long and hard for SETI funds, and he was finally able to convince Sen Proxmire, among others, that the search was scientifically important and relatively inexpensive.

reproduced from CQ March 1983

AR

# NATIONAL EMC ADVISORY SERVICE



Tony Tregale VK3QQ  
NATIONAL EMC CO-ORDINATOR  
38 Wattle Drive, Watsonia, Vic 3087

## "THE COMPUTER CONTROLLED CAR"

Knight Rider cockpit electronics is not as far away as we might think judging by the amount of computer hardware and software being squeezed into today's automobiles. In a system represented by man and machine, the machine should take over as many supporting functions as possible, so that the driver, relieved of routine chores, can relax and dedicate his whole attention to the traffic. He can achieve this if he's sure at all times that all items of the vehicle are functioning correctly.

Recent years have seen a rapid growth in the field of vehicle electronics, especially in the area of electronic display instrumentation, and systems monitoring. The major developments in this field have occurred in a relatively short time.

The language of digital technology is one of breathtaking simplicity: 1 or 0, on or off. Despite this simple, yes/no thinking, computers can answer complicated questions quickly, reliably and accurately. . . . However, accuracy in computer systems greatly depends on the system's ability to reject unwanted signals and energy. Computer systems can be, and quite often are, susceptible to electromagnetic energy. The Amateur Service, being an extensive user of the electromagnetic spectrum, views with concern the electromagnetic compatibility (EMC) of these super mobile computer systems.

The on-board computer can monitor such parameters as: average fuel consumption, how far you can go on the remaining fuel, oil level and temperature, coolant level and temperature, windscreen washer fluid level, tyre pressure, battery fluid level, collision avoidance radar, braking system operation and fluid level, transmission operation and fluid level, fuel injection, automatic self levelling system, windscreen clarity monitor, engine performance monitor, climate monitor, and others.

Perhaps the most interesting aspects of the mobile computer, and those which are of special concern to the Amateur Radio Service, are those functions which assist with the control of various vehicle parameters, and where these parameters could be inadvertently changed by on-board or close-proximity additional electronic and communications equipment. However, vehicle manufacturers are, in contrast to home entertainment and consumer product manufacturers, very conscious of the need for vehicle electronics to have good EMC. They agree there is a need to increase usage of electronics in vehicles and this does require serious consideration of electromagnetic interference effects to ensure there is no

generation of electromagnetic interference or, alternatively, effect on the vehicle from on-board and external electromagnetic radiation. Vehicles are tested to measure the effect of the electromagnetic environment experienced in proximity of radio and television broadcasting stations, fixed and mobile communications stations and radar installations.

Magnetic field tests are also performed which simulate the effect of magnetic fields encountered by the vehicle in the proximity of power transmission stations and high power transmission lines. Tests are also performed to determine the broadband for field radiated emissions from the vehicle's electrical system, which may interfere with radio and television reception. Further tests are performed to identify any narrow band radiated emissions from the vehicle's electrical system or communications equipment, outside the vehicle.

The manufacturers are quick to point out that this is a new area and there are few standards formulated. Generally, vehicle manufacturers establish their own procedures to test for EMC performance.

Their concern in regard to the problem of EMC is borne out, and illustrated, in the fact that the owner's manual contains a notice regarding installation of two-way radio systems. Nevertheless, members of the Amateur Radio Service would be well advised to investigate the vehicle's total EMC before installing additional electronic and/or communications equipment in a vehicle which has any form of electronic or computer control. Furthermore, a full series of tests should be completed after installation of communications or, other additional, electronic equipment prior to taking the vehicle on the road. On the road, proceed with caution until you are satisfied there are no ill effects from the additional on-board equipment.

Some of the controlled systems include:

- (a) *Wheel-slip-control: This helps to prevent wheel spin with driving torque and wheel locking when braking.*
- (b) *Gear-and-motor-control: This opti-*

*mises engine warm up, behaviour, fuel consumption, emission of pollutant, and noise.*

- (c) *Fuel-injection-control: This ensures that the correct amount of fuel is supplied to meet the exact needs at each particular moment.*
- (d) *Anti-lock-braking system: This prevents the wheel from locking in a skid under emergency stop conditions even on road surfaces which provide different grip left and right. The system allows full use to be made of the grip actually available on each individual wheel, thus permitting the shortest possible braking distance.*
- (e) *Automatic-self-levelling-system: This maintains the balance of the vehicle irrespective of loading, breaking, or cornering.*
- (f) *Automatic-cruise-control: This provides constant cruising speed without the need for the driver's foot to be on the accelerator. The vehicle will maintain the chosen speed irrespective of external conditions. The driver can instantly disconnect this control.*

It is obvious from the information so far, the automobile industry has come a long way with electronics in recent years; this overview is only the tip of the iceberg. One of the advantages of designing in electronics is that the range of possible tasks is almost limitless. One of the disadvantages is maintaining the EMC amongst the various systems and outside influences.

In conclusion, perhaps we should consider some of the automobile EMC aspects which are covered by an Australian Standard. Although this standard is not mandatory, it does lay down some interesting parameters in regard to spark ignition systems used in motor vehicles and similar powered devices.

Australian Standard 2557/82 was prepared under the authority of the Telecommunications and Electronics Committee on Electromagnetic Interference as one of a series of standards intended to facilitate the electromagnetic compatibility of electric and electronic equipment.

The limits and methods of measurement given are based on the recommendations of the International Special Committee on Radio Interference (CISPR) in CISPR 12:1978 and acknowledgement is made of assistance obtained therefrom. The standard varies, however, in regard to the following:

- 1 Limits are extended to cover the range 30 MHz to 1000 MHz, being identical to the CISPR recommendations for the range 40 MHz to 250 MHz. Beyond this range the limits are in accordance with guidance given in CISPR 12.
- 2 Requirements for suppression devices are not included nor are methods of measurement for such components.
- 3 A clause (Clause 8) on detection of offending vehicles from the roadside has been included. Marginal bars indicate a deviation from CISPR 12. In general the changes are editorial in nature, reflecting changed working or a re-arrangement of material which would prevent ready comparison with the international document.

The purpose of the standard is to establish uniform requirements for electromagnetic interference limits and methods of measurement for interference radiated by the ignition systems of

motor vehicles, motor boats and other devices powered by spark-ignition internal combustion engines. The term 'motor vehicles' is understood to include both road transport and off-road vehicles such as tractors, construction vehicles and snow mobiles. The term 'similarly powered devices' is understood to include chainsaws, lawnmowers, irrigation equipment, construction equipment and the like, whether mobile or stationary.

The standard does not apply to diesel-powered equipment. Other items which are sources of interference and which may contribute to the overall level of interference produced by a motor vehicle but are not within the scope of this standard are electric motors, heaters and air-conditioners, whether integral or added to the vehicle in question.

This standard establishes limits for electromagnetic interference radiated by spark ignition systems used in motor vehicles, motor boats and other similarly powered equipment, describes methods of measurement, and gives guidance on methods of interference suppression.

This standard applies to the radiation of

electromagnetic energy in the frequency range 30 MHz to 1000 MHz which may cause interference to radiocommunication services, and which is emitted from —

- (a) vehicles propelled by spark ignition internal combustion engines;
- (b) boats propelled by spark ignition internal combustion engines; and
- (c) other equipment or devices equipped with spark ignition internal combustion engines.

The standard does not apply to aircraft, electric traction systems or electrically propelled vehicles.

The limits for radiation based on quasi-peak measurements are as follows:

- (a) From 30 MHz to 75 MHz ..... 50  $\mu$ V/m.
- (b) From 75 MHz to 400 MHz ..... 50  $\mu$ V/m, at 75 MHz rising linearly to 180  $\mu$ V/m at 400 MHz.
- (c) From 400 MHz to 1000 MHz ... 180  $\mu$ V/m.

A fully copy of this Standard is available from the Standards Association of Australia. We trust this and other Standards of the Association will become mandatory under the auspices of the Radiocommunications Bill/Act in the near future. **AB**



## EDUCATION NOTES

I have received several letters criticising the February AOCPP Theory exam. The statistics supplied by DOC show that the pass rate was much lower than usual — as shown in the table for the last three February exams.

STATE	1983			1982		1981	
	No candidates	No passing	% pass rate	% pass rate	% pass rate	% pass rate	% pass rate
VK2	232	60	26	36	32	32	32
VK3	203	46	23	39	35	35	35
VK4	148	20	14	45	31	31	31
VK5/8	106	21	20	49	52	52	52
VK6	80	15	19	50	29	29	29
VK7	31	5	16	36	39	39	39
Total	800	167	21	41	35	35	35

It is tempting to conclude from these figures that this year's exam must have been harder.

However, I am sure this is the whole answer. It is not so simple.

The papers used in February had all been used previously at major exam centres and had been accepted by candidates as fair. I have recently had another good look at all the papers used, and could find only very minor cause for complaint — one or two questions with a very wordy stem, and one word which would perhaps be unfamiliar to some candidates (not a technical term). Nor were they unbalanced — the number of questions from each section fitted the established pattern.

On each paper, at least forty of the fifty questions had been used on previous papers several times over. So this leaves only the few questions which appeared for the first time on the August papers. As I stated when commenting on the August papers, all these 'new' questions were fair and within the scope of the syllabus. However some of them did require application of knowledge rather than just recall of remembered facts.

Most of us would expect a newly licensed amateur to be able to apply the facts he has learnt to his equipment and operating procedures, and to be able to consider material from several sections of the syllabus in relation to the same problem, so I do not think a few questions of this character are unfair. Next month I will give some examples of this type of question.

The exam system is seen by some individuals as a 'contest' between DOC and the candidates, and many attempts have been made to compile lists of questions as recalled by examinees. These lists may be more of a hindrance than a help to future candidates by giving them false ideas of the actual standard required. Very few people are able to recall exam questions accurately enough to reproduce the precise wording of both stem and choices that may be necessary in a well written question, so the recalled question may end up entirely different from the original.

In other cases, the candidate remembers what he believes to have been the question, not what was actually written. This has been proven in many instances.

Brenda Edmunds VK3KT  
FEDERAL EDUCATION CO-ORDINATOR  
56 Baden Powell Drive, Frankston, Vic 3199

Even if the recalled questions are accurate, they cannot prepare the candidate for any new questions that may be added, or new styles of questions. I have said previously that it is reasonable to expect new questions to be added to the papers from time to time.

Since the Department is planning to introduce quarterly exams at both levels as soon as possible, and is ultimately aiming towards monthly exams, their question bank will need to be greatly extended in the future.

No doubt many of the questions to be added will show a change of emphasis, in keeping with the technological developments. Lecturers and candidates should all be aware of these possibilities.

With the present 'state of the art', a question on a phase-locked loop is much more relevant to most candidates than one on a vacuum tube rectifier high voltage power supply.

Both exam syllabuses are at present undergoing review with a view to reassessing content and defining depth of each section.

If you have any comments to make on these matters, I would be pleased to hear from you by letter (QTHR) or on the Education Net, Wednesday evenings 1100 UTC 3.685 MHz.

For those planning to sit the August exam, our sample paper will be available very soon from me or from the Executive office.

Best of luck to you all and remember —  
**READ THE QUESTIONS.**

73, Brenda VK3KT **AB**



# CONTESTS



Reg Dwyer VK1BR  
FEDERAL CONTEST MANAGER  
PO Box 236, Jamison, ACT 2614

## CONTEST CALENDAR

### JULY

- Canada Day Contest
- 2-3 Venezuela Phone Test
- 9-10 NZAR Memorial Test (June AR)
- 9-10 IARU Radiosport Test
- 16-17 International ORP TEST \*\*\*
- 16-17 SEANet CW Test \*\*\*
- 30-31 Venezuela CW Test \*\*\*

### AUGUST

- 6-7 European CW Test \*\*\*
- 13-14 Remembrance Day Contest
- 13-14 DARC WAE CW Test
- 13-14 SEANet Phone Test \*\*\*
- 17 QLF Activity
- 20-21 SARTG RTTY Test
- 27-28 All Asian CW Test

### SEPTEMBER

- 3-4 DARC Corona "CORONA" 10 m RTTY
- 10-11 GORP Activity \*\*\*
- 17-18 VK Novice Test
- 17-18 Scandinavian CW \*\*\*
- 24-25 Scandinavian Phone \*\*\*

### OCTOBER

- 1-2 VK/ZL Phone Contest \*\*\*
- 15-16 VK/ZL CW \*\*\*

The contests marked with \*\*\* are not yet confirmed....

## QLF ACTIVITY

This contest should be a lot of fun and now there is a certificate for all who enter (cartoon type) and just the thing to let your hair down after the RD contest.

WHEN? — Wednesday, 17th August, 2000 through to 2200.

OBJECT? — To have a packet of fun on 80 metres.

MODE? — CW ONLY... BUT

1 You must use a straight key.

2 Operate with the hand not normally used, eg a "right-handed person" must operate the key with his LEFT hand and vice versa.

3 If ambidextrous, you must operate the key with your foot. (Others may do this by choice for better scoring.)

CYPHER — in three sections — RST/Mode/Branch with mode indicating method of keying as follows... Left Hand (LH); Right Hand (RH); Left Foot (LF); Right Foot (RF); so that a cypher of 579/LF/11 would indicate a report of 579 — operating key with Left Foot and in Branch 11.

SCORING — ONE point per contact EXCEPT in any contact in which either contestant is using "foot keying", both operators will count 2 points for that contact; EXCEPT where both operators use "foot keying", then both will score 3 points. TOTAL SCORE is total of points multiplied by total of different Branches worked.

LOGS — NO log to be submitted — BUT —

determine your own score as per the rules and send this to ZL2GX to be received by 31 August, 1983.

PRIZE — In keeping with such an activity this is not fully determined. It could be a free trip to Antarctica and on the other hand it might not be. Everyone gets a certificate (cartoon type). Please send an SASE.

NOTE — This is NOT an activity for any "sad sack". It is however, an opportunity to have FUN — to populate the band — to populate ALL the band — without stress or strain... so let it be...

## PLEASE NOTE — THE RD CONTEST

The practice of one operator operating two station/calls simultaneously is considered not to be within the spirit of the contest and any logs suspected of this will be disqualified without recourse.

## RTTY IN THE RD

The South Australian Radio Teletype Group (SARG) is attempting to promote the use of teletype in VK and they will be participating in the RD contest as a major exercise to gain coverage for the activity.

It is common knowledge that the band spectrum is 'slightly congested!!!!' during the test and that there are some members of the amateur fraternity that have little, if any, regard for others on the bands. This type of attitude, when carried to its limits, does nothing to promote amateur radio or good sportsmanship and in fact largely attenuates the enthusiasm and progression of the other users.

As amateur radio users we all should be keen to provide the opportunity for any and all groups to participate in the activity of their choice without corruption of their signals.

Therefore, please allow a clear band for the RTTY and CW operators during the contest.

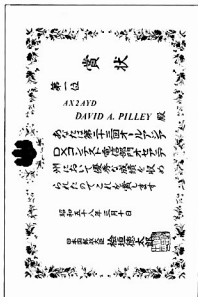
## VK NOVICE CONTEST

Don't forget the VK Novice Contest in September. Let's generate some interest for this contest which had such a poor showing last year. This contest is a marvellous opportunity for all to participate and gain awards. The maximum speed for CW has been reduced to 10 WPM to encourage this mode.

## ALL ASIAN CW

A letter from David Pilley, the winner for Australia in the CW section of the contest was received together with copies of his winning certificates. The medal unfortunately did not reproduce well enough for printing.

He mentions that his win was achieved with the use of a TS820S and 4BTV trapped vertical. So the big equipment is not necessary to win these contests but the will



to participate is the most necessary component.

Congratulations David and thanks for representing Australia in this contest.

## AMENDMENTS TO 1983 JOHN MOYLE CONTEST PUBLISHED IN JUNE AR

In Section D, six hour section VK3BSP was omitted with a score of 1038.

Section D, twenty four hour section VK3WI, 3259 score was omitted.

Section I, twenty four hour section VK3WP, 370.

Section I, six hour section VK5NOD, 510.

Apologies to these stations for their omission, for full results see page 44, June Amateur Radio.

## KEYMEN'S CLUB OF JAPAN (KCJ) SINGLE OPERATOR CW CONTEST

OBJECT — To work as many amateur stations in as many Japanese prefectures as possible using Japanese CW bands.

ELIGIBILITY — Single operator amateur stations worldwide.

PERIOD — Starts 1200 UTC Saturday followed by the third Sunday in August; ends 1200 UTC the Sunday (August 20-21, 1983).

CATEGORIES — Single operator, CW only: a) All Bands, b) Single Band.

CONTEST EXCHANGE — JAs — RST plus Prefecture Code. Others — RST plus Continent Code.

INVALID CONTACT — a) Contact with a multi-operator station.

b) crossmode or not CW

c) crossband, via repeater or satellite.

SCORING — a) Points: One point for the complete



The Japan Amateur Radio League, Inc.

14-2, Sugano 1-chome, Setagaya-ku, Tokyo Japan  
P. O. BOX 317 Tokyo Central

# JARL

(Translation)

## CITATION

*AKAYD*

FIRST PRIZE

(Call & Name)

It is my honour to present you this citation as a recognition for your outstanding score achieved during the 23 All Asian DX Contest,  
PC Region

Date 19 Mar 1983

Signed Tokuhiro Higaki

The Minister of Posts and Telecommunications  
of Japan (Minister's seal)

Decisions of The KCJ Contest Committee are official and final.

**DEADLINE** — All entries must be postmarked no later than the last day in November, 1983 and mailed to: Kikuo Takamitsu, JA9FT, 4-16-22 Izuminomachi, Kanazawa, Ishikawa 921 JAPAN.

## REFERENCE

### 1 JAPANESE CW BANDS

1 907.5-1 912.5 MHz, 3 500-3 525 MHz, 7 000-7 030 MHz, 14 000-14 100 MHz, 21 000-21 150 MHz, 28 000-28 200 MHz, 50 010-50 100 MHz.

### 2 JAPANESE PREFECTURE CODES

AC Aichi, AM Aomori, AT Akita, CB Chiba, EH Ehime, FK Fukui, FO Fukuoka, FS Fukushima, GF Gifu, GM Gunma, HG Hyogo, HK Hokkaido, HS Hiroshima, IB Ibaraki, IK Ishikawa, IT Iwate, KA Kagawa, KG Kagoshima, KM Kumamoto, KN Kanagawa, KO Kochi, KT Kyoto, ME Mie, MG Miyagi, MZ Miyazaki, NG Niigata, NN Nagano, NR Nara, NS Nagasaki, ON Okinawa, OS Osaka, OT Oita, OY Okayama, SA Saga, SG Shiga, SN Shizane, SO Shizuoka, ST Saitama, TG Tochigi, TK Tokyo, TO Tokushima, TT Tohoku, TY Toyama, WK Wakayama, YG Yamaguchi, YM Yamagata, YN Yamanashi.

## THE 7TH WEST AUSTRALIAN ANNUAL 3.5 MHz CW & SSB CONTESTS TRANSMITTING & RECEIVING

### RULES

#### 1 — DURATION:

CW — Saturday 30th JULY and Sunday 31st JULY.

SSB — Saturday 3rd and Sunday 4th SEPTEMBER. On both days between the hours of 1100 UTC and 1330 UTC time is 5 operating hours in all for each contest.

#### 2 — FREQUENCIES:

All contacts to be made in the 3.5/3.7 MHz band using frequency allocation applicable to your licence conditions.

#### 3 — CALLING:

Stations will call CQ WAA using the three times three technique, infringement of this rule by the use of long CQ calls may entail disqualification as will pre-arranging of a QSO.

#### 4 — SCORING:

Points for contacts are as follows:  
Within Western Australia 5 points per contact.  
WA to all Mainland

Eastern States 2 points per contact.  
WA to VK7 4 points per contact.  
WA to VK0 & Overseas 8 points per contact.  
Stations other than WA 3 points per contact with WA stations only.

#### 5 — MULTIPLIERS:

A multiplier of 2 per WA Shire worked will apply to the final score.

#### 6 — CONTACTS:

Stations may be worked twice on each night once between 1100 to 1300 UTC and again between 1300 to 1330 UTC these contacts will count for points. Each time the contact for WA stations will take the form of an exchange of 5 characters comprising RST/RS and Shire Letters.

Eg a station in NORTHAM sends 579 NM or if in HARVEY 579HY this helps towards the worked all shires award.

Eastern States and Overseas stations will send RST/RS plus a running number starting at 001.

## The Japan Amateur Radio League

# 23 ALL ASIAN DX CONTEST

CALL

PLACE

SECTION

会場は、第1回オーストラリア  
DXコンテストに際して東京  
から後援を依頼のありましたの  
でこれを後援します。

This certifies that you  
have submitted a log for  
the 7th ALL ASIAN DX CONTEST.

Based at Tokyo Japan

Date 2 Mar 1983



President, JARL

## David's certificates

contact with a station in Japan on each band.

b) Multipliers: Forty-seven Japanese prefectures on each band.

c) Final Score: Multiply points by sum of multipliers.

**LOG INSTRUCTION** — a) Log should indicate time in UTC, callsign and exchange.

b) Multipliers should be clearly marked in the log only the first time it is worked on each band.

c) Use a separate sheet for each band.

d) The callsign of the entrant should be indicated in every sheet of the log.

e) Each entry must be accompanied by a

## Summary Sheet.

**AWARDS** — Certificates will be awarded:

a) The top through the third scorer in each entry category.

b) Top scorers in each continent and Japanese prefecture who are ranked in the higher half of the whole entrants in each category.

All scores will be published. It is available by 1 IRC (surface mail) or 7 IRCs (air mail) enclosed with the log.

**DISQUALIFICATIONS** — An entry with more than two per cent duplicate and/or invalid contacts left on the log will be disqualified. Violation of the amateur radio regulations and/or the rules of the contest will cause disqualification.

DATE:	CALL:	OPERATOR:
Time UTC	Call Wkd	RST Out
RST In	Shire Letters	Shire Multiplier
Points Claimed		

7 — LOGS:  
Contest logs to be set out on one side of a Quarto or Foolscap sheet with columns headed as sample log.

**SAMPLE LOG:**  
Column 7 to be totalled at the foot of each page and the running totals brought forward. The last page to contain the following summary: Total number points score, Input power, Equipment and Antennas used, along with comments on the contest in general. SWL participants score as above using the outgoing Tx score.

All logs to be addressed to the WAA Contest Committee, PO Box 6250, Hay Street East, Perth 6000 and posted so as to reach us not later than 31st August for the CW Contest and 30th September for the SSB Contest. The results for both contests will be published in the December issue of AR.

#### SHIRE LETTERS

1	ALBANY TOWN	AT
2	ALBANY	AL
3	ARMADALE	AM
4	AUGUSTA — MARGARET RIVER	AR
5	BASSEDEAN	BA
6	BAYSWATER	BW
7	BEVERLEY	BV
8	BODDINGTON	BD
9	BOULDER	BO
10	BOYUP BROOK	BB
11	BRIDGE TOWN — GREENBUSHES	BG
12	BROOKTON	BK
13	BROOME	BE
14	BROOMEHILL	BH
15	BELMONT	BL
16	BRUCE ROCK	BR
17	BUNBURY	BY
18	BUSSETTON	BN
19	CANNING	CA
20	CAPEL	CL
21	CARNAMAH	CH
22	CARNARVON	CN
23	CHAPMAN VALLEY	CV
24	CHITTERING	CI
25	COTTESLOE	CT
26	COCKBURN	CB
27	COLLIE	CE
28	COOLGARDIE	CG
29	CORROW	CW
30	CORRIGN	CS
31	COTTESLOE	CO
32	CRANBROOK	CR
33	CUBALLING	CB
34	CUE	CU
35	CUNDERDIN	CD
36	DALWALLINU	DU
37	DANDARAGAN	DN
38	DARDANUP	DP
39	DENMARK	DK
40	DONNYBROOK — Balingup	DB
41	DOWERIN	DR
42	DUMFRIES	DM
43	DUNAS	DS
44	EAST FREMANTLE	EF
45	EAST PILBARA	EP
46	ESPERANCE	ES
47	EXMOUTH	EX
48	FREMANTLE	FM
49	GINGIN	GG
50	GNOWANGERUP	GP
51	GERALDTON	GN
52	GOOMALLING	GM
53	GOSNELLS	GS
54	GREENOUGH	GR
55	HALLS CREEK	HC

56	HARVEY	HY
57	IRWIN	IN
58	KALAMUNDI	KA
59	KALGOORLIE	KL
60	KATANNING	KG
61	KELLERBERRIN	KN
62	KENT	KT
63	KOJONUP	KP
64	KORDININ	KD
65	KOORBA	KO
66	KULIN	KU
67	KWINANA	KW
68	LAKE GRACE	LG
69	LAVERTON	LV
70	LEONORA	LA
71	MANDURAH	MB
72	MANJIMUP	MP
73	MEEKATHARRA	MK
74	MELVILLE	ME
75	MENZIES	MZ
76	MERREDIN	MD
77	MINGENEW	MW
78	MOORA	MA
79	MOROWA	MR
80	MOSMAN	MS
81	MUKINBUDIN	MU
82	MULLEWA	ME
83	MUNDARING	MG
84	MURCHISON	MH
85	MURRAY	MY
86	MT MAGNET	MT
87	MT MARSHALL	ML
88	NANNUP	NN
89	NAREMBEEN	NN
90	NARRGIN	NG
91	NARRGOIN TOWN	NT
92	NEOLANDS	NL
93	NORTHAM	NM
94	NORTHAM TOWN	NO
95	NORTHAMPTON	NH
96	NUNAGADIN	NG
97	PEPPERHART GROVE	PG
98	PERENJORI	PE
99	PERTH	PH
100	PINGELLY	PY
101	PLANTAGENET	PT
102	PORT HEADLAND	PD
103	QUAIRADING	QU
104	RAVENSTHORPE	RT
105	ROCKINGHAM	RM
106	ROBBOURNE	RB
107	SANDSTONE	SS
108	SERPENTINE — JARRAHDALE	SL
109	SHARK BAY	SB
110	SOUTH PERTH	SP
111	STIRLING	ST
112	SUBIACO	SU
113	SWAN	SW
114	TAMBELLUP	TP
115	TAMMIN	TM
116	THREE SPRINGS	TS
117	TODDYAY	TY
118	TRAYNING	TG
119	UPPER GASCOYNE	UG
120	VICTORIA PLAINS	VP
121	WAGIN	WN
122	WANDERING	WD
123	WANNEROO	WO
124	WAROONA	WR
125	WEST ARTHUR	WA
126	WESTONIA	WS
127	WEST PILBARA	WP
128	WICKEPIN	WI
129	WILLUNA	WU
130	WILLIAMS	WL
131	WONGAN — BALLIDU	WB
132	WOODANILLING	WO
133	WYALKATCHAM	WY
134	WYNDHAM EAST — KIMBERLEY	WE
135	WEST KIMBERLEY	WE
136	YALGOO	YO
137	YILGARN	YN
138	YORK	YK

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HARDY WORLD PTY. LTD. 81 NEWCASTLE STREET, SYDNEY (02) 80 6550  
ON HIGHER FLOOR 5 JASMINE STREET, PORT MACQUARIE (066) 83 2174  
LAWSON 100 MULLALEY ROAD, GUNDEDAH (067) 47 2838  
LAWSON 101 BARNES STREET, TANNMOUTH (067) 85 4622  
HARRIS BOUTCH 125 MADRE (066) 86 2145

**INTERSTATE**

VIC: EASTERN COMMUNICATIONS — 168 ELGAR ROAD, BOX HILL (03) 288 3107  
BRIAN STARES — 11 MALMSBURY STREET, BALLARAT (053) 39 2808  
SUMMER ELECTRONICS — 78 KING STREET, BENDIGO (054) 43 1977

TAS: HOBBY ELECTRONICS — 477 NELSON ROAD, MT NELSON (002) 23 6751  
GELSTON ELECTRONICS — SUMMER HILL (003) 27 2256  
ADVANCED ELECTRONICS — 5A THE QUADRANT, LAUNCESTON (031) 31 7075  
V.H. ELECTRONICS — 57 WEST PARK GROVE, BURNIE (094) 31 1708  
OLD: MITCHELL RADIO CO. — 59 ALBION ROAD, ALBION (07) 57 6830

**S.A. &**

N.T.: INTERNATIONAL COMMUNICATIONS SYSTEMS PTY. LTD. — 8 NILE ST. PORT ADELAIDE (08) 47 3668  
ARENA COMMUNICATIONS SERVICES — 642 ALBANY HWY. EAST VICTORIA PARK (08) 261 5422  
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WILKS ELECTRONICS — 445 MURRAY STREET, PERTH (09) 321 2207  
BAY RADIO — 18 BANKSIA STREET, BUNBURY (095) 21 2236  
RON DENT — 115 PATON ROAD, SOUTH HEAD, AND (091) 72 1112  
SELECT TRONIX — TON PRICE (091) 89 1564



Roy Hartkopf VK3AOH

34 Toolangi Road, Alphington, Vic 3078

## FORWARD BIAS

VK1 DIVISION



John MacPhee VK1NEN  
VK1 PUBLIC RELATIONS OFFICER

36 Kavel Street, Torrens, ACT 2607

(G) General. (C) Constructional. (P) Practical without detailed constructional information. (T) Theoretical. (N) Of particular information to the Novice.

### HAM RADIO January 1983

Report on propagation on the New Amateur Bands. (G) Azimuth and Elevation Calculator. (P) LF Converter. (P) The nicad 'memory' myth. (G)

### BREAK IN March 1983

HF Antenna Special.

### CQ-TV No 121 February 1983

1 GHz oscillator. (C)

### HAM RADIO March 1983

15th Anniversary Issue.

### BREAK IN April 1983

NZART Annual Conference.

### ORBIT No 12 February 1983

World wide Satellite news.

### 73 MAGAZINE May 1983

Annual Antenna Issue, Home Brew Contest.

### 73 MAGAZINE June 1983

Meter Special. New and old methods of using surplus meters. (G) International News. (G) Diary of a partially sighted amateur. (G)

### VHF COMMUNICATIONS

A European magazine published quarterly. Could be of interest to the advanced experimenter in UHF and microwaves, weather-satellite images etc. Boards and components are not easily available for the projects but basic ideas and information can be useful. Ten year index is available from WIA Federal Headquarters. Also some back copies.

### MICROWAVES AND RF

Hayden Publishing Co Inc USA. A professional magazine giving state of the art information on new products, microwave synthesizers, RF Mosfet amplifiers giving 600 watts of RF output, etc.

### WHAT'S NEW IN COMPUTING WHAT'S NEW IN ELECTRONICS

Australian Trade Magazines published by Westwick Farrow Pty Ltd NSW. Information on new products and where further literature (and possibly the actual products themselves) can be obtained. Further information available from the publishers. Recent developments include components such as a 256 K-bit EPROM and a one farad capacitor.

AR

Buying or selling Gear  
Use HAMADS first

How many times have you come up on 3.570 MHz at 1030 UTC on Sunday evenings for the VK1 Awards Net and hear the same VK1 callsigns that have been there every week? How about putting some new blood into the Awards Net? Why don't we have more full-call VK1's joining the net or better still offering to control the net for one evening? This would give our VK1 Awards Manager, Gavan VK1NEB an evening off occasionally. Think about it and any VK1 novice or full-call wishing to be VK1 Award Net Controller for an evening contact Gavan VK1NEB, Ph: 58 5390.

### QSL CARDS — NON-FINANCIAL MEMBERS

These cards will be found in the unsorted QSL card bag at each monthly meeting.

### ATV GROUP

My sources have informed me that test pictures have started and that further developments and experiments are con-

tinuing. Further information will be in August AR.

### VK1 BULK PURCHASES

The VK1 Division in the past have made bulk purchases of URM67 coax and will be purchasing more in the very near future. We have also purchased 6146B valves in quantity.

Do you have any suggestions on bulk purchases, eg PL259 connectors?

If you do contact Alan VK1KAL on 58 2568 Home.

### MEETING AGENDA

JULY: Cooper Tools — Soldering Equipment.  
AUGUST: Radio Inspector.

Well that's it for this month. If you have any information to be included in future "FORWARD BIAS" contact John VK1NEN 86 3290 Home.

73 John VK1NEN  
AR

## LEARNING THE MORSE CODE? Try the All New BT-1 — Basic Trainer For Morse Code



Advanced Electronic Applications in conjunction with ETS (Educational Technology and Services)\*, has developed the BT-1 Code Trainer. ETS methodology, based upon research by a prominent mid-west university, has demonstrated that a typical student using this system and the BT-1, can learn Morse Code to speeds of 20 WPM in four weeks based upon two 20 minutes daily training sessions.

The pre-programmed BT-1 computerised trainer will allow you to achieve proficiency in Morse Code faster than any other known method.

No prior knowledge of Morse Code is required to use the BT-1. There are no tapes to purchase or wear out. The BT-1 operates from a 12 VDC source, the unit can also be used in mobile settings via the 12 VDC system.

\* Education Technology & Services, see page 81 October 1981 issue of Ham Radio Magazine.

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# VK2 MINI BULLETIN

Jeff Pages VK2BYY  
PO Box 1066, Parramatta, NSW, 2150



# VK4 WIA NOTES

Bud Pounsett VK4QY  
NEWS & INFORMATION OFFICER  
33 Lasseter Street, Kedron, Qld. 4031

## COUNCIL REPORT

Divisional Council met on the 6th May. Affiliated Clubs Officer Jeff Pages reported on the 8th Conference of Clubs, and matters arising from the Conference were discussed (see June AR Mini Bulletin). The opening of Amateur Radio House took up considerable time with the technicalities and fine detail becoming more complex as we looked closer at it. Last minute preparations included the setting up of various displays and organisation of the closed circuit TV link and video recording. Federal Councillor Stephen Pall presented a detailed report on the Federal Convention, and while many of the agenda items from VK2 were lost considerable experience was gained. Maintenance and improvements at Dural were considered, particularly with a view towards operating the Divisional station in the Australian contests. Council approved the purchase of a tri-band beam and rotator, as well as a quantity of coaxial cable. Interference during callbacks on the Dural, 2 metre repeater was discussed, and it was decided to rearrange the order of callbacks so as to take the 2 metre callbacks first.

## FIREWORKS NIGHT

The Dural fireworks night was cancelled due to a poor response to ticket sales. Considerable discussion of reasons for the downturn in interest took place during the 2 metre callbacks, giving the Dural Committee plenty of food for thought. If you have any ideas as to why this once popular event failed to attract many starters this year, or if you have any thoughts on alternative activities, please put pen to paper. Whilst on this subject, it should be pointed out that the Dural property is available to any member or club wishing to use it for barbecues, contests and so forth, provided prior arrangements are made.

## VK2 WICEN

The following exercises will be taking place over the next few months and interested amateurs may obtain further details on the Thursday night nets, VHF in Sydney on VK2RWS 7.150 at 9 pm and statewide on 3.600 MHz at 9.30 pm. Information is also given on the Sunday broadcasts.

9 July — Car rally at Batemans Bay on the south coast.

7 August — City to Surf foot race in Sydney.

17/18 September — Welfare message handling exercise, statewide.

Written communications to the WICEN Committee should be sent C/- PO Box 154, Roseville, NSW, 2069.

## AFFILIATED CLUBS

The Divisional library at Parramatta includes a section devoted to club newsletters, and librarian Aub Topp would appreciate receiving copies of such newsletters.

Here is some further information on three of our affiliated clubs.

### SUMMERLAND AMATEUR RADIO CLUB

PO Box 524, Lismore, NSW, 2480.

Meetings: Workshop — Thursdays 1900, General — 3rd Friday monthly, at Kadina High School, Goonellabah, Lismore.

Nets: Repeater 6800 and 28.470 MHz Fridays 2000 EAST, 3.605 MHz daily 0630 EAST.

Committee: President — J G Virtue VK2GJ, Vice President — E J Virtue VK2EJV, Secretary — W K Munn VK2YHN, Treasurer — J W Alcorn VK2KCK, Committee members — L Martin VK2EA, L W Cook VK2ZAQ, E G Smith VK2ZFS.

Repeaters: VK2RIC channel 6800, VK2RSC channel 8675.

### CASTLE HILL RSL AMATEUR RADIO CLUB

C/- Mills Road, Glenhaven, NSW, 2154.

Meetings: 1st Wednesday of the month at 8 PM at the Castle Hill RSL Club.

Nets: 28.450 MHz on the 2nd Wednesday of the month.

Committee: President — R Hudson VK2YVO, Vice President — P Balnave VK2KDJ, Secretary/Treasurer — C MacKinnon VK2OYM, Publicity — I O Toole VK2ZIO.

Classes: AOC and NAOC courses each Monday and Tuesday night.

Club callsign: VK2DXS

### GOULBURN AMATEUR RADIO SOCIETY

C/- W J Garvey, Lot 22 MacArthur St, Taralga via Goulburn.

Meetings: 2nd Wednesday of each month at the Goulburn Police Boys Club.

Committee: President — I Jeffrey VK2KIJ, Vice President — D Thompson VK2PRA, Secretary/Treasurer — W Garvey VK2KWG.

Nets: 3.615 MHz at 2100 EAST each Sunday.

Any news and information for inclusion in the September Mini Bulletin should be sent to the WIA NSW Division, PO Box 1066, Parramatta, NSW, 2150 to reach the office by the 22nd July.

AR

## WANTED

**TAPE RECORDING.** I would like to obtain a copy of a tape which was made with W1HDQ in 1960 with the title "VHF Horizons". Approx 1 hour long. Several copies were made and distributed round Australia. Any information to Tim Mills VK2ZTM at PO Box 204, Willoughby, 2068.

## QUEENSLAND COUNCIL 1983/84

The incoming council was declared elected at the re-convened Annual General Meeting of the Division on 20 May. Eleven amateurs stood for council and were duly declared elected, there being no need for a ballot.

These are your councillors for the 1983/84 year and their portfolios.

GUY MINTER VK4ZXZ President & Alternative Federal Councillor

HAROLD BREMMERMAN VK4HB Senior Vice-President & Minute Secretary

THEO MARKS VK4MU Secretary

ROSS MUTZELBURG VK4AQK Treasurer

JOHN AARSE VK4QA Junior Vice-President & Research Officer

BILL DALGLEISH VK4UB Club Liaison

KEN AYERS VK4KD State WICEN Co-ordinator

BARRIE KER VK4BIK Publicity

BUD POUNSETT VK4QY News & Information

DON HOPPER VK4NN Service Liaison

ALAN WEST VK4KWK

## BARCFEST 1983

7 May will go down in the history of amateur radio in Queensland as the birth-date of BARCFEST. This is the name given to the gathering of amateurs at the Indooroopilly High School, organised by the Brisbane Amateur Radio Club. The event was an outstanding success. There were a number of displays which attracted a lot of interest and the most talked about after the event were the RTTY and SSTV demonstrations. The South East Queensland Tele-type Group staged the former, while two individual amateurs, Rob Green, VK4NBJ and Col Powell, VK4ATC, demonstrated their slow-to-fast scan digital converters. There were a number of lectures and not to be left out, there was plenty of interest for the XYLs and kids, handicrafts, pottery and jumble sales. It was a one day event and was attended by some 300 amateurs. Southeast Queensland amateurs are hoping that this 1983 event will be the first of many.

## CONGRATULATIONS, MICHAEL!

Twelve year old Michael Minter, son of Guy VK4ZXZ and Anne, VK4NRA has passed his novice examination. How Guy and Anne found the time to teach Michael the mysteries of radio must in itself remain a mystery. Guy is our Divisional President and Anne is our bookshop manager. Proud Dad is hoping to talk DOC into giving Michael the callsign, VK4VXZ.

Bud VK4QY



## VK3 WIA NOTES

Jim Linton VK3PC  
PRESIDENT VK3 DIVISION

At the general meeting of the VK3 Division the following office bearers were elected.

**SECRETARY** — Ian Palmer VK3YIP  
**PRESIDENT** — Jim Linton VK3PC  
**VICE**  
**PRESIDENT** — Bill Wilson VK3DXE  
**TREASURER** — Des Clarke VK3DES  
**FEDERAL** — Alan Noble and  
**COUNCILLORS** — Des Clarke

"Despite what some think, intruder watching is not hard.

"If you're interfered with during a QSO just make a log note of it and at the end of the month send a report to the Intruder Watch Co-ordinator," he said.

Alf explained that an operator needed to spend only a little time and effort to be an observer. His message was clear — every radio amateur and SWL can help the



Jim VK3PC presents Alf VK3LC with a silver medallion.

Photograph by Barry Wilton VK3YXX.

### VK3 HONOUR INTRUDER WATCH

The Victorian Division has honoured Alf Chandler VK3LC for his long service to the WIA and the International Amateur Radio Union.

At this year's VK3 Annual General Meeting he was awarded a silver medallion in recognition of his work in Intruder Watching. VK3 Councillor, Jim Linton VK3PC, in making the presentation, said: "Occasionally one comes across a person who leaves a lasting impression and is the type who goes about his job with a minimum of fuss and a high degree of efficiency. 'One such person is Alf Chandler who has served as Victorian, Federal and IARU Region 3 Intruder Watch Co-ordinator.'"

Alf retired as IWC last January after fourteen years, but would continue to file reports on intruders.

In accepting the medallion the old-timer who got his ticket in 1926 said he was indeed honoured. Launching into an off-the-head speech Alf said he would be failing if he didn't put a mention in for the Intruder Watch Service.

Intruder Watch Service by simply sending as little as one report on an intruder.

VK3 Intruder Watch Co-ordinator is Steve Phillips VK3JY (QTHR), who can supply free cassettes of intruder modes of transmission to help anyone identify intruders.

A list of known intruders on 80, 40, 20, 15 and 10 metres is also available and is certainly an easy method to get started on intruder watching.

Alf Chandler said the Intruder Watch had been successful in getting intruders out of the exclusive amateur bands over the years.

He recalled a couple of occasions when he had written letters to people in right places pointing out that certain stations had signals where they shouldn't be. Not all intrusions are deliberate, some are spurious emissions or harmonics.

Alf's direct approach has been necessary in the past because some radio administrations have been reluctant to act on reports of intrusions in amateur bands.



## FIVE-EIGHTH WAVE

Jennifer Warrington VK5ANW  
59 Albert Street, Clarence Gardens, SA 5039

The Annual General Meeting took place on Tuesday 26th April and the following members were elected to Council. The positions were discussed and nominations made at subsequent Council Meetings.

<b>President</b>	<b>Bill Wardrop</b>	<b>VK5AWM</b>
<b>Secretary</b>	<b>David Clegg</b>	<b>VK5AMK</b>
<b>Treasurer</b>	<b>Graham Ratcliff</b>	<b>VK5AGR</b>
<b>Vice</b>		
<b>President</b>	<b>Dick Boxall</b>	<b>VK5ARZ</b>
<b>Vice</b>	<b>Jenny</b>	
<b>President</b>	<b>Warrington</b>	<b>VK5ANW</b>
<b>Federal</b>	<b>Jenny</b>	
<b>Councillor</b>	<b>Warrington</b>	<b>VK5ANW</b>
<b>Membership</b>		
<b>Secretary</b>	<b>Ken Westerman</b>	<b>VK5AGW</b>
<b>Minutes</b>		
<b>Secretary</b>	<b>John Gardiner</b>	<b>VK5PJG</b>
<b>Education</b>		
<b>Officer</b>	<b>Roland Bruce</b>	<b>VK5OU</b>
<b>DOC Liaison</b>		
<b>Officer</b>	<b>David Clegg</b>	<b>VK5AMK</b>
<b>Alternate</b>		
<b>Federal</b>		
<b>Councillor</b>	<b>David Clegg</b>	<b>VK5AMK</b>
<b>Facilities</b>		
<b>Supervisor</b>	<b>David Clegg</b>	<b>VK5AMK</b>
<b>Facilities</b>		
<b>Supervisor</b>	<b>Graham Ratcliff</b>	<b>VK5AGR</b>

The display station which was set up in the GPO from the 17th to the 20th of May was a great success, if the enjoyment of the volunteers was any indication. Contacts were made on 2 metres and HF and the video tape entitled 'Amateur Radio — the national resource of every nation' was shown continuously (courtesy of John Ingham VK5KG who filled one side of a tape with it, and National Panasonic who lent us their 'top of the range' VCR with automatic rewinding). Posters lent by Federal Office, displays of QSL cards, a map showing call-areas, and hand-outs of leaflets, old Journals, ARs, and call books, all contributed to make a most impressive and interesting display.

Another piece of PR which we are trying, is a small advertisement placed in the radio column of the Advertiser, on the Saturday prior to General Meetings, advertising the Tuesday night's programme.

It doesn't pay to make a suggestion in this Division, or you may find yourself with a job! John Mount VK5EV suggested that we should have a Disposals Officer, a position that he held for many years in VK6, so who better to know how to get it started in VK5? Congratulations John, and if my recent experience is any indication, you will find it a most rewarding occupation.

### DIARY DATE

26th July, 'Getting started in Constructional Practices' Steve Mahoney — VK5AIM.



## FT726 V/UHF ALL MODE TRIBANDER

- USB, LSB, FM, CW modes
- 10 watt RF output on two metre (6 metre, 70 centimetre units optional)
- 11 memories store mode as well as band
- Programmable limited band seen between memories
- Satellite I.F. unit (optional) for full duplex cross-band
- Squelch on all modes
- GaAs FET RX pre-amp in 70 centimetre unit



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## FT980 HF ALL MODE COMPUTER AIDED TRANSCEIVER

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 (80C85)



- General coverage RX 150KHz-29.99mHz
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# AR SHOWCASE

## **DIGITALLY-SYNTHESISED HF TRANSCEIVER FROM JRC**

JRC presents the JST-100 smart HF amateur-band transceiver incorporating its most advanced radio technology.

The compact HF transceiver employs an 8-bit microprocessor to control all the complicated functions such as band and mode selection, and memory channel access. The 11-channel memory can easily store and recall not only VFO frequencies but also working frequency bands and modes.

The JST-100 is fully equipped with attractive and powerful capabilities such as three PLL circuits phase-locked with a highly stable 10 MHz standard crystal oscillator; two digital VFOs permitting independent selection of bands and modes; and memory finder capability to recall any stored frequency with the working VFO being held.

Standard and optional features are available and include:

Fully digital 10 Hz-Step Synthesiser, Digital



Two-VFO System, 11-channel Memory, Memory Finder Capability, Easy tuning with Main Dial and Up-Down buttons, Easy-to-operate panel design, Receiver Input circuit of Narrow BPF type, Large multi-function display, Remote control of frequencies and modes, Overmodulation indicator, Unique ALC input, Frequency data output.

Options include a power supply antenna tuner, speaker, desk microphone, hand microphone and key.

Further details about this exciting product are available from Vicom.

## **M42G 500-512 MHz**

The M42G is a 2 dB gain mobile antenna for the 502-512 MHz radio telephone band and has been designed for centre roof mounting on type OB base.

VSWR BW 1.5:1 — 502-512 MHz

Gain — 2 dB

Length — 390 mm

For further information contact Scalar Industries Pty Ltd, 20 Shelley Ave, Kilsyth, Vic 3137. Phone (03) 725 9677.

AR



**IF YOU HAVEN'T LOOKED AT  
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LATELY, THIS IS WHAT  
YOU'VE MISSED . . .**

- The Spratly Island incident — in depth.
- Yaesu's FT-980 "Computer Cat".
- Flexible mods for Yaesu FT-290R.
- An inside look at CIA propaganda stations.

- The VK3BCN report on emergency communications.
- A plain language summary of the WIA "RADCOM" submission.
- A cheap external VFO for Yaesu's FT-707.
- The complete VHF/UHF frequency and beacon list.

**OCEANIA'S AMATEUR MAGAZINE — \$1.50 AT YOUR NEWSAGENT.**



# LETTERS TO THE EDITOR

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publisher.



## MAKE MORE USE OF CW

May I say how much I agreed with and appreciated Marshall Emm's article Pounding Brass in *Amateur Radio* May 1983. I have had fifty eight years "on the air", much of those years in the communication branch of the FCO and can understand both the amateur and professional outlooks.

The present wording of the RST code, if adhered to when the report is from the S meter, can result in a report as follows "Reading you without any difficulty, your signals are barely audible".

We have a perfectly good code, namely the Q code. QSA and QRM (strength and readability). If it is desired to indicate the reading is by meter this could be done by QSA (Fig) SM. It has always seemed to me unnecessary to have a scale from 1 to 9 for this purpose. A strength of 2 (very weak signal) is frequently changed from 1 to 3 during a QSO and so on up the scale, 4 and 5 often occur together. This effect can be seen on the meter.

If there is a need to refer to the note (I prefer that word to tone), the signal QRI covers that need, and could be re-worded QRI? Is my note faulty. QRI your note is . . .

Quite often very little thought seems to be given to what the operator actually has said in his report. For instance, almost any day can be heard "R5" (followed by) "QRM". In other words "Your signals are perfectly readable, they are being interfered with". I am sure the op in many cases means to say he is reading alright but there are other stations near which might cause QRM. Rather like driving in heavy traffic and complaining that your driving is being interfered with.

May I now please be allowed to make a very sincere plea. Please consider making more use of CW. say one hour each month CW only for all club members with an invitation for any non-members to join in these sessions. I make this plea as I feel sure the future credibility of our service in the eyes of the world could be reduced if the general public becomes increasingly inclined to the following reaction when told about amateur radio: "Oh yes, we got one of those last Christmas, and talk to people all over the place."

The increased use of CW would have to be worldwide but surely Australia could show the way?

Sincerely  
Norman Richardson VK4BHI  
1089 South Pine Road,  
Evelton Hills,  
Brisbane. Qld 4053

AR

## TECHNICAL CORRESPONDENCE

I read with interest, Theo (VK1KV) comments on the 290R and Peter VK2XAN also, as I had one myself. I wrote to Japan and they kindly sent me the enclosed explanation.

Leo Pinkewitch VK2QB  
20 Catherine Street,  
Kotara South, 2268

Dear Mr Pinkewitch,

Thank you for your letter of 3rd February regarding the FT-290R.

We have received reports of overcharge to the Ni-Cd battery from a few customers. According to these reports, we investigated and found that the overcharge trouble is always caused by use of a different DC jack than that which we supply. We found that in some countries, a DC plug similar to ours is available, but the diameter of the outer contact sleeve is smaller than that of the one the transceiver is designed for.

When the non-standard plug is used, the switch on the EXT DC jack does not open the contacts and the DC applied to the EXT DC jack is also applied to the battery installed in the transceiver.

However, this trouble only occurs when the non-standard DC plug is used. When the supplied DC plug is used this trouble never occurs. However, to provide more protection, we have installed an additional diode between the negative terminal of EXT DC jack and ground. This modification protects against reverse DC connection to the EXT DC jack.

We hope and trust this information will prove helpful to you. While we remain.

Very truly yours,  
YAESU MUSEN CO LTD  
S. Yokoi, Export Department  
Box 1500, Tokyo, Japan

This is in reply to Peter Laughton's somewhat incomprehensible letter on page 51 of the May issue of AR regarding my modification to the Yaesu FT290R which was published in the January issue of your magazine.

My modification as stated is intended to protect the internal cells (NiCad or Alkaline) against the application of the 13.8 volt external power supply should the spring switch in J05 not open when the power supply plug is inserted into J05.

As you will no doubt agree Peter, 13.8 into 9F6 (or dry cells) does not go! At least two users of FT290 rigs in VK1 have found this out to their cost.

I hasten to explain, however, that while the circuit diagram in my article correctly shows the required modification, the written description of the modification which follows the diagram, is incorrect in that insertion of the "added diode" in the manner described would prevent the charging of the NiCads through J04.

Nor for the purposes of this modification should the Yaesu circuit diagram be regarded as a wiring diagram for this section of the FT290, as, in reality, diode D02 connects direct to the centre spring of jack J05, to which the red positive lead from the battery pack also connects.

Therefore, to carry out the mod effectively it is necessary to de-solder the red positive lead and the cathode end of diode D02 from J05, solder the cathode end of the "added diode" to this point, and then proceed as per the circuit diagram in my original article.

With the mod done new alkaline cells in my FT290 provide well in excess of 11 volts to operate my rig "walk portable". More to the point I feel much more secure in the knowledge that when operating with an external 13.8 volt power supply it is most unlikely that the dry cells will have the external supply added to them should the switch contacts in J05 not operate to isolate these cells.

Yours faithfully,  
Theo Vidler VK1KV  
18 Heyson Street,  
Weston, ACT 2611

AR

## COVER APPRECIATION

Congratulations on the cover of the May issue! Now we're really beginning to look professional. The detail, the colour and the composition are all superb and the photographer and all those involved in the preparation of this picture for printing and the final production are to be commended.

It's nice to see the white band across the top of the cover disappear and the title now blended in and the whole bled at the edges.

Thank you all for AR's finest cover ever.

Harry (R H) Atkinson VK6WZ  
294 Middleton Road,  
Albany, WA 6330

AR

## GOOD HOME

It was with some misgiving that I asked if you could publish in your May issue a "Give Away" in the form of a RAAF AR14 Rx.

I was delighted to find on Thursday 29th April that you had done so and amazed at the response forthcoming over the next few days.

I feel that it might be of interest to the many local and interstate callers to learn that after assessment of several earlier applications I entrusted it to Dennis Sillett VK3WV, who approached me on behalf of the Historic Radio Society on the morning of 30th April.

Thank you for your help in finding a safe home for the old rig.

Yours faithfully,  
Ray Wilson VK3MU  
45 Pleasant Road,  
Hawthorn East, 3123

AR

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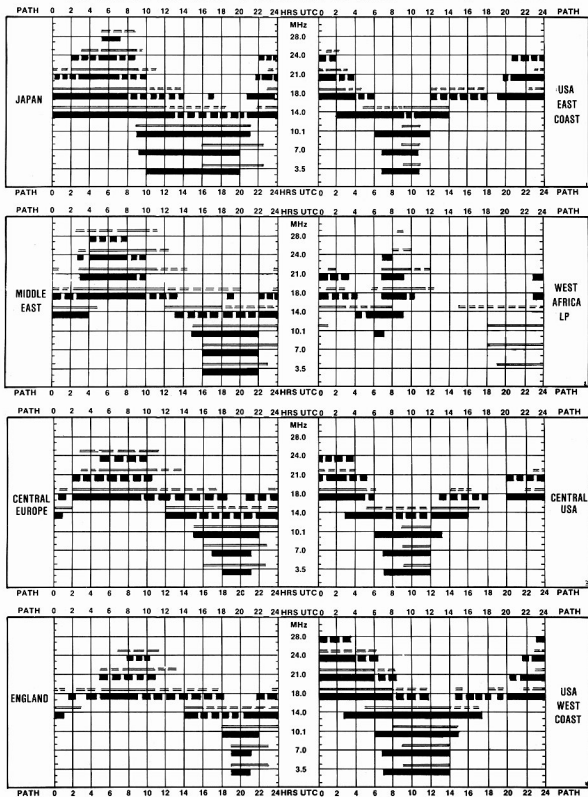
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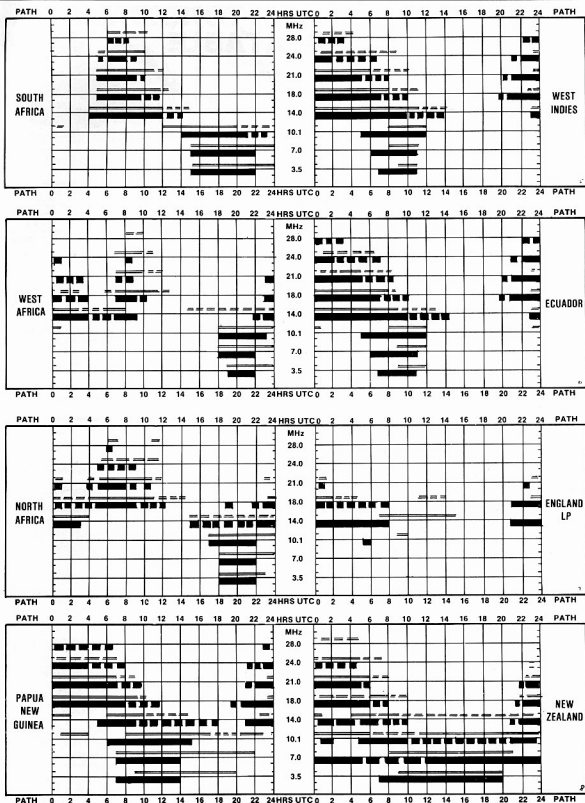
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# IONOSPHERIC PREDICTIONS

Len Poynter VK3BYE





Predictions courtesy Department of Science and Environment IPS Sydney. All times in UTC.





# Obituaries

ANTHONY (Tony) BURGE

VK4BAC

The amateurs on the Darling Downs and in many places were saddened by the passing of Tony on 15th January, 1983.

Tony was the tender age of 19 years. His amateur activities started in January 1961 as VK4VKJ. He upgraded in December 1981 to VK4BAC. Tony was active on SSB, CW and shortly before his death was setting up for RTTY. He was an honorary member of the Darling Downs Radio Club and conducted the local 2 metre net.

What was not known by amateurs who contacted Tony was that he had confined to a wheelchair and had no use of his legs and very limited use of his arms and hands. Tony was never heard complaining about his disability on air. Nevertheless Tony insisted on sitting for the CW exam to upgrade where he had extreme difficulty in moving his arm across the page.

In recent times Tony was looking at ways to enable him to use a soldering iron to work on constructing projects and equipment. Tony's example of a handicapped person successfully and very actively participating in the hobby has been a guide to other handicapped people. As a result of a generous donation by his family, Tony's efforts will be remembered by all amateurs with the establishment of a club station for handicapped people on the Downs.

To Tony's family, father Bill, mother Coral, and brother Greg we extend our sympathies and thanks for the wonderful hospitality extended to all amateurs both on and off the air by Tony and his family.

RON VK4AGS and ROLEY VK4AOR

AR

ARTHUR ALEXANDER

BURROWS SLIGHT (Alec)

VK2ZA

Alec was born in London, England on 1 October 1902 and he died peacefully in hospital on 1 November 1982, aged 81. He came to Australia in 1914 and later joined the RAAF in the permanent Air Force in 1927. He acquired his amateur licence no. 1199 on 11-12-1930 (AOCPI).

I first met Alec in 1941 when we were mutually engaged in the type testing, at AWA Ashfield, of the RAAF ATS/ARB. He was RAAF Liaison Officer and I was the resident AID inspector stationed at AWA. During those wartime years our paths crossed several times on other RAAF work.

Alec subsequently became Wing Commander and Officer in Charge of Ballarat RAAF Communications Training College. Upon retirement he came to live in Sydney again where he later took up full time teaching with the Department of Technical Education (1959). It was here at North Sydney Technical College that we met again, both of us teaching television. It was a pleasure and privilege to work with such a competent and helpful colleague. He was a master of the 'home brew' and imparted this skill to many of his students.

Upon his second retirement in 1965 he 'home brewed' his SSB transmitter and receiver making a fine job of them both. He, with others, inaugurated the 'Electorates Award' and personally went out of his way to assist those wishing to get this award.

He was one of the 'old timers' whose occupation was also his loved hobby.

Long will he be remembered by his family, his RAAF and technical mates and those whom he befriended over years of amateur radio QSOs.

Arthur VK2IK

AR

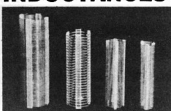
# Silent Keys

It is with deep regret we record the passing of —

Mr H E HANCOCK  
MR ALBERT C McGRADY  
MR A MOFFAT  
MR R G O WILSON

VK2BIC  
VK2BGM  
VK3FJ  
VK3MU

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3-16	3/8"	16	3"	No 3011	\$2.30
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\* Please insert STD code with phone numbers when you advertise.

- Eight lines free to all WIA members. \$9 per 10 words minimum for non-members.
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- Repeats may be charged at full rates.
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- QTHR means address is correct as set out in the WIA current Call Book.

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# TAKE AWAY

TYPE 15 MACHINE. 240-110 V transformer, 750 VA. Free to first caller. VK2KH QTHR. Ph: (02) 525 2981.

# WANTED — NSW

840-12 TRANSISTOR. 1 only. Barry, VK2ZXB. Ph: (02) 476 3911.

CIRCUIT OR GENERAL DATA on Admiralty B41 VLF Rx, ECH81 and E292 valves also needed. All replies answered. Nev, VK2OF QTHR.

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PSU FOR FT200 (complete) or power transformer Yaesu 34002. Details to Summerland ARC, Box 524, Lismore, 2480.

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EDDYSTONE 770R COMMUNICATIONS RECEIVER (19-165 MHz) Handbook. Buy or borrow on deposit for copy. URGENT. Also 6299, 7554, 6442, 6884, 7077, 6205

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# ADVERTISERS' INDEX

AMATEUR RADIO ACTION	58
BAL ELECTRONIC SERVICES	57
CW ELECTRONICS	3
DICK SMITH ELECTRONICS	2
ELECTROMARK PTY LTD	62
EMFONS	IBC
GFS ELECTRONIC IMPORTS	32 & 33
HAMRAD	52
HIGH TECHNOLOGY COMPUTER SYSTEMS PTY LTD	62
HY-TECH DISTRIBUTORS	54
IAN J TRUSCOTT ELECTRONICS	59
ICOM AUSTRALIA PTY LTD	BC
K BRUCE SMITH	29
MAGPUBS	6, 43 & 45
NOVICE LICENCE VK2	52
NOVICE LICENCE — G Scott & A	29
PARAMETERS PTY LTD	IFC
TRAEGER DISTRIBUTORS (NSW) PTY LTD	29
TRIO-KENWOOD (AUSTRALIA) PTY LTD	53
VAINS ANTENNA SERVICES PTY LTD	3
VICOM INTERNATIONAL PTY LTD	29
WATCHMAN ELECTRONICS	62
WERNER & G WULF	63
WILLIAM WILLIS & CO PTY LTD	62
WILLIAMS PRINTERS	31

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**Receiver.** Utilizing an ICOM designed J-FET DBM, the IC-751 has a 105dB dynamic range. The 70.4515MHz first IF virtually eliminates spurious responses, and a high gain 9.0115MHz second IF, with ICOM's PBT

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**32 memories.** Thirty two tunable memories are provided to store mode, VFO, and frequency, and the CPU is backed by an internal lithium memory backup battery to maintain the memories for up to seven years. Scanning of frequencies, memories and bands are possible from the unit, or from the HM 12 scanning microphone. In the Mode-S mode, only those memories with

a particular mode are scanned, others are bypassed. Data may be transferred between VFO's, from VFO to memories, or from memories to VFO.

**Features.** All of the above features plus full function metering, SSB and FM squelch, convenient large controls, FM option, a large selection of plug-in filters, and a new high visibility multi-color fluorescent display that shows frequency in white, and other functions in white or red, make the IC-751 your best choice for a superior grade HF base transceiver.

**Options.** FM unit, external frequency controller, external PS-15 power supply, internal power supply, high stability reference crystal (less than 100Hz, -10 C to +60 C), HM12 hand mic, desk mic, filter options:  
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CW: FL52A, FL53A  
AM: FL33

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